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AUTHOR O'Connell-Mason, Christine; Raison, Susan Blom
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ABSTRACT

This module (part of a series of 24 modules) is on adapting curriculum to the needs of mainstreamed students. The genesis of these materials is in the 10 "clusters of capabilities," outlined in the paper, "A Common Body of Practice for Teachers: The Challenge of Public Law 94-142 to Teacher Education." These clusters form the proposed core of professional knowledge needed by teachers in the future. The module is to be used by teacher educators to reexamine and enhance their current practice in preparing classroom teachers to work competently and comfortably with children who have a wide range of individual needs. The module includes objectives, scales for assessing the degree to which the identified knowledge and practices are prevalent in an existing teacher education program, and self-assessment test items. Bibliographic references and journal articles on regular and special education curricula are included. (JD)

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Extending the Challenge:
Working Toward a Common Body of Practice for Teachers

Concerned educators have always wrestled with issues of excellence and professional development. It is argued, in the paper "A Common Body of Practice for Teachers: The Challenge of Public Law 94-142 to Teacher Education,"* that the Education for All Handicapped Children Act of 1975 provides the necessary impetus for a concerted reexamination of teacher education. Further, it is argued that this reexamination should enhance the process of establishing a body of knowledge common to the members of the teaching profession. The paper continues, then by outlining clusters of capabilities that may be included in the common body of knowledge. These clusters of capabilities provide the basis for the following materials.

The materials are oriented toward assessment and development. First, the various components, rating scales, self-assessments, sets of objectives, and respective rationale and knowledge bases are designed to enable teacher educators to assess current practice relative to the knowledge, skills, and commitments outlined in the aforementioned paper. The assessment is conducted not necessarily to determine the worthiness of a program or practice, but rather to reexamine current practice in order to articulate essential common elements of teacher education. In effect, then, the "challenge" paper and the ensuing materials incite further discussion regarding a common body of practice for teachers.

Secondly and closely aligned to assessment is the developmental perspective offered by these materials. The assessment process allows the user to view current practice on a developmental continuum. Therefore, desired or more appropriate practice is readily identifiable. On another, perhaps more important dimension,

*Published by the American Association of Colleges for Teacher Education, Washington, D.C., 1980 ($5.50).

the "challenge" paper and these materials focus discussion on preservice teacher education. In making decisions regarding a common body of practice it is essential that specific knowledge, skill and commitment be acquired at the preservice level. It is also essential that other additional specific knowledge, skill, and commitment be acquired as a teacher is inducted into the profession and matures with years of experience. Differentiating among these levels of professional development is paramount. These materials can be used in forums in which focused discussion will explicate better the necessary elements of preservice teacher education. This explication will then allow more productive discourse on the necessary capabilities of beginning teachers and the necessary capabilities of experienced teachers.

In brief, this work is an effort to capitalize on the creative ferment of the teaching profession in striving toward excellence and professional development. The work is to be viewed as evolutionary and formative. Contributions from our colleagues are hearlily welcomed.

CURRICULUM ASSESSMENT AND MODIFICATION

The federal mandate (Public Law 94-142) to provide "appropriate" educational programs to special needs students in the "least restrictive environment" requires that regular class teachers be prepared to make a broad range of curriculum decisions. While special educators have long been involved in designing and modifying materials to meet the needs of exceptional students, elementary and secondary regular education teachers have tended more often to utilize a standard curriculum for all students in their classes. Today, as greater numbers of students with special needs are being mainstreamed into regular classrooms, the variation in ability and skill levels of students has broadened and regular classroom teachers are being required to provide educational experiences and materials that are appropriate for a range of student abilities. In the paper "A Common Body of Practice for Teachers: The Challenge of Public Law 94-142 to Teacher Education" Reynolds and associates (1989) suggested that because of the new demands placed on regular class teachers,

> "The means and procedures by which curriculum is developed, adopted, and changed should be understood (by teachers) and there should be practice in designing and modifying curriculum and materials, especially to suit the individual needs of students (in teacher preparation programs).

Cognitive, social/behavioral, and physical characteristics and skills may limit (or enhance) what the individual student is able to learn. These characteristics may also change significantly what the student needs to learn; frequently these characteristics and skills will also necessitate modifications in how the student is taught. Through work with students with varying abilities and needs special

educators have developed a technology and body of applied research that focus upon strategies for assisting the individual learner. Until recently this technology has been utilized primarily in small groups and with individual pupils. The recent move towards greater inclusion of handicapped pupils in regular elementary and secondary classrooms has stimulated efforts to apply the special education curriculum assessment and modification techniques in large group settings within the traditional classroom.

This module focuses upon the principles and procedures that will assist teachers in tailoring the curriculum of their school to the unique individuals within their classrooms. Suggestions for curriculum modification, within secondary and elementary classrooms, for a variety of content areas are included in this module. This module is intended to serve as a resource to college faculty as they introduce the notion of curriculum assessment and modification to their students. Suggested student experiences accompany this unit as do articles for additional reading.

Contents

Within this module are the following components: Page

Set of Objectives. The objectives focus on the teacher educator rather than on a student (preservice teacher). The objectives identify what can be expected as a result of working through the materials. The objectives which apply to teachers are also identified. They are statements about skills, knowledge and attitudes which should be part of the "common body of practice" of all teachers. 5

Rating Scales. Scales are included by which a teacher educator could, in a cursory way, assess the degree to which the knowledge and practices identified in this module are prevalent in the existing teacher-training program. The rating scales also provide a catalyst for further thinking in each area. 6

Self-Assessment. Specific test items were developed to determine a user's working knowledge of the major concepts and principles in each subtopic. The self-assessment may be used as a pre-assessment to determine whether one would find it worthwhile to go through the module, or as a self-check after the materials have been worked through. The self-assessment items also can serve as examples of mastery test questions for students. 7

Rationale and Knowledge Base. The brief statement summarizes the knowledge base and empirical support for the selected topics on curriculum assessment and modification. The more salient concepts and strategies are reviewed. A few brief simulations/activities and questions have been integrated with the rationale and knowledge base. 8

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Bibliography. A partial bibliography of important books, articles and materials is included after the list of references. 56

Appendix 1. Key to Activities for Learner 59

Appendix 2. Curriculum Evaluation 60

Articles. Six brief articles (reproduced with authors' permission) accompany the aforementioned components. The articles support the rationale and knowledge base. 65

Objectives for the Module

The purpose of this module is to assist teacher educators in:

1. Understanding a number of perspectives on curriculum in regular and special education and how these differing perspectives can be coordinated;
2. Becoming familiar with a variety of approaches to personalizing or modifying curriculum through learner and curriculum analysis;
3. Facilitating teachers' practices of specific curriculum modifications; and,
4. Promoting in teachers an understanding of the need to adapt curriculum to the abilities of the individual student.

Reasonable Objectives for a Teacher Education Program

Upon completion of a teacher education program, teachers should be able to:

1. List areas of importance in learner analysis;
2. List dimensions of curriculum which may require modification;
3. List important social aspects of curriculum modification;
4. Analyze the learning needs of problem students in their classes and develop reasonable alternatives to how the students are presently taught;
5. Identify how sample worksheets have been modified and pinpoint the curriculum dimensions of these modifications;
6. Compute the readability level of a random passage of reading;
7. Analyze a chapter in a commonly used text to determine demands which the chapter places on students and how the demands might be altered;
8. Modify chapters in a text, exams, writing assignments, and group lessons and assess those modifications in terms of student performance and feedback.

Rating Scale for Teacher Preparation Program

_____ 1. Students in the teacher preparation program are taught how to follow prescribed curriculum guides. The content and sequence is the same for all students.

_____ 2. Students in the teacher preparation program are taught how to follow prescribed curriculum guides, but to introduce special interest topics to the class as a whole.

_____ 3. Students in the teacher preparation program are taught how to include varying levels of material for students of varying abilities in the class.

_____ 4. Students in the teacher preparation program are taught how to use different levels of material and to alter the pace and amount of coverage of lessons and assignments according to student abilities.

_____ 5. Students in the teacher preparation program are taught how to assess and modify curriculum materials along a number of dimensions such as reading level, format, structure, and conceptual complexity.

Self Assessment

1. List and briefly describe two differing perspectives on regular education curriculum.
2. List and briefly describe two differing approaches to curriculum in special education.
3. Discuss the rationale for special educators knowing about regular education curriculum.
4. Discuss the rationale for modifying regular education curriculum materials for handicapped students.
5. Define a personalized curriculum.
6. List several areas to consider in analyzing learner needs and group them into similar categories. Which areas you think should be higher priority to consider than others? Why?
7. Give two examples of eliminating nonessentials in a particular curricular area.
8. Describe when you would provide a parallel curriculum.
9. Describe how can tasks be structured to provide more feedback to learners.
10. List three types of comprehension questions.
11. List and briefly describe several dimensions along which curricula may require modification.
12. Describe which dimensions require more time and effort to modify. Why?
13. Describe how social aspects of curriculum modification may potentially undermine implementation.
14. Define readability formula. What purpose do readability formulas have in curriculum assessment and modification?

RATIONALE AND KNOWLEDGE BASE

Topical Outline

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PERSPECTIVES ON REGULAR AND SPECIAL EDUCATION CURRICULA

Decisions concerning what, when, and how to teach are made in classrooms, in committee meetings, at colleges, at school board meetings, by legislators, and by citizens in a variety of community settings on a daily basis. Some decisions concerning what to teach are the result of spontaneous teacher-pupil interactions or deliberations by teachers and students. Other judgments originate from the intentional actions of committees brought together for the expressed purpose of curriculum modification. Curricula are also influenced by historical perspectives and varying interpretations of how children learn and how to best facilitate that learning. Special education and regular elementary and secondary education have been influenced differently by social, cultural, economic, and historical forces. The result, today, is two closely related fields, regular and special education, that contain many contradictory practices. The need, today, is to quickly find an efficient method for extracting these practices of proven merit from both regular and special education and combining them in a coherent program. The need, today, is to blend the best of the two systems.

A logical way to begin the process of identifying and understanding these differences between regular and special education is to examine the instructional priorities of each field, including the recommendations of each for introducing these priorities. Each view of instructional priorities and each educational philosophy contains different implications for what and how students are taught. Bellack (1969) presents one such overview of evolving practices in curriculum decision making. (This article is included in Appendix 3). While Bellack has focused upon regular education curricula, understanding curriculum theory from this more global perspective will assist with the comparison of regular and special education principles and practices.

Current practices in regular education strongly reflect the conceptualizing of Bruner and Piaget. Bruner advanced the notion of a spiraling curriculum (1963), the idea that concepts and skills can be introduced at early ages and periodically reintroduced into the curriculum with different degrees of focus and sophistication. Bruner states that,

> the cycle of learning begins, then, with the particular and the immediate, moves toward the abstraction and comes to a temporary goal when the abstraction can then be used in grasping new particulars in the deeper way that abstraction permits. (1963, p. 48)

The notion of a spiraling curriculum theoretically may mean that students who have learning problems can always get another chance to master a concept or skill. In practice, however, whenever content is reintroduced previous skill mastery at an earlier level is often assumed. In such situations students lacking cognitive entry skills (Bloom, 1980) often necessary for mastery of the curriculum at that level slip further and further behind their peers. To reconcile the needs of students lacking entry level skills with the spiraling curriculum, teachers will need to provide for the simultaneous presentation of similar material on varying levels. Such provision makes more likely that essential content will not only be taught but also be mastered by all students. When learning problems hinder the mastery of content, modifications must be made in instructional materials to make them appropriate to the entry skills with which each student approaches his/her academic tasks.

A second major influence on educational practices has been the developmental philosophy espoused by Piaget (1952). Piaget's developmental perspective suggests that learning proceeds through a series of stages, each succeeding stage requiring completion of the previous stage. The developmental perspective also suggests that a fairly standard age range exists for the acquisition of each

stage of cognitive development. The implications of this theory have been far reaching in special education and have formed the basis for many tests designed to detect early deviation from normal growth patterns (The Denver Developmental Test, Frankenburg, Fandal & Dodds, 1970; The Uzgiris-Hunt Scales, 1975; the Bayley Scales of Infant Development, 1969).

Elementary education has also relied heavily upon Piagetian theory to determine the order in which to introduce various learning activities. In many instances what has been "good" for the average child has been ineffective for the student with learning problems, possibly because of differences in learning patterns or instructional needs of the students. The developmental question being addressed by special education has been, "when is it necessary to return to lower level developmental tasks that may be cognitive prerequisites for the target task(s)?" Piagetian notions are also being examined for educational practices appropriate for children with severe learning problems and physical disabilities (Haring, 1976). A critical issue involves the determination of the need for compensatory versus remedial curricula (Bricker, 1976). The question is, should one remediate deficit skills or move on to compensating for these deficits? The issue of compensatory versus remedial curriculum is especially relevant to junior and senior high school students in whom special needs may be identified with only a few years remaining for public school instruction.

In special education as a whole there has been no unique academic curriculum or influence as pervasive as that of Bruner or Piaget in regular education. Many of the special education materials overlap with Title I, other remedial programs, (e.g., remedial reading, remedial math) and with regular education materials. In recent years these similarities have been further encouraged by mainstreaming.

Today approximately 70% of all students receiving special education services spend at least part of their day in regular classrooms and must master the regular education curriculum (or face curricular isolationism). While there has always been consensus among special educators that attainment of functional basic skills in reading, writing, and math is vitally important, the focus on basic skill attainment is now even more apparent as these special education students are mainstreamed.

A comparison of elementary and secondary resource rooms indicates that while both settings address regular education curriculum, different coping skills are taught in each environment. At the elementary level, the materials used in the resource room usually are intended to teach basic skills and often vary from materials found in regular classrooms. In such a situation the role of the resource teacher includes helping students to switch systems and to work effectively in the curriculum in the regular class. At the secondary level, assignments from regular classes frequently form the core resource room content. Note taking, outlining, following directions, and other organizational skills are often taught in conjunction with the content curriculum.

Resource room teachers also utilize regular class curricula as they assess students for those academic and preacademic skills that are prerequisites for success in regular classes. Such assessment data form the foundation for effective remediation designed to enhance progression through the normal school curriculum. In short, inherent in P.L. 94-142 is a challenge to special educators to tailor special education curricula more to the requirements of regular education curricula. Regular education teachers should take an active role in requesting and planning for such a focus.

Just as the special education curriculum must be coordinated with the regular education curriculum so, too, the regular education curriculum must be assssed, and sometimes changed in order to meet the needs of the wider range of students now in the regular classrooms. Modifications may include changes in how subjects are taught, e.g., increasing the structure of directions for an assignment or giving increased feedback to students about their performance. Modifications can also occur in the reading level or level of abstraction of assignments, as well as in the amount of repetition and pacing of a lesson. Meyen and Lehr (1980) have cited a body of literature supporting such techniques for students with learning problems. Creating a greater number of options within a regular classroom for accommodating students identified as handicapped can also improve the performance and behavior of other students who may not be identified specifically as handicapped, but who, nonetheless, exhibit problems of learning and motivation. In such a way, then, Public Law 94-142 encourages academic conditions that can benefit a wide range of students.

PERSONALIZED CURRICULA

The concept of a school's curriculum may be perceived in many ways. In its most rigid sense it might be thought of as the content of the standard texts and lectures used with all students in a particular system (standardized). In a more flexible conceptualization the curriculum of a school system may be viewed as the sequence of specific skills, facts, and ideas it attempts to impart to a student according to the student's abilities and interests (personalized). In today's schools not only do students vary in their ability to profit from the same textbooks and lectures, they may also vary in the skills, facts, and ideas that they

need to be taught and have the ability to learn. As America's school populations are becoming more heterogeneous, curriculum needs to become more fluid and student-centered.

In this module, curriculum refers to what is deliberately taught in the schools; generally this refers to an inclusive and specific set of concepts and operations which are intended to result in a set of predefined behaviors for the learner (O'Connell & Horton, 1980, p. 9). Therefore, in planning curricula the intent of educators should be to identify specific goals and objectives appropriate to the needs and skills of the learner (with consideration of his/her unique learning history and unique combination of skills and attributes). These goals and objectives should be realized through some reasonably cost effective utilization of methods, materials, and resources. In operating from a personalized approach to school curricula teachers become active shapers of the curriculum rather than passive implementers of a curriculum designed by others.

In summary, although the ideal school curriculum exists for the benefit of all pupils and the society into which they will enter as adults, effective curricula must also meet the particular needs and characteristics of individual students. Therefore, effective curriculum planning demands not only analysis of the tasks presented by a curriculum but also the characteristics of the individuals who are to learn these tasks before decisions about the scope and sequence are made. Personalized programming (Howell, Kaplan, & O'Connell, 1979) considers not merely individualizing instruction by grade level, but also by assessing and taking the best advantage of the student's learning attributes (e.g., background, skills, motivation, and aptitudes). Personalized programming attempts to assure that there is congruence between a student's academic and social needs and

abilities and the general purpose and requirements of the curriculum, so that each student's curriculum becomes responsive to what he/she needs to know and is able to learn.

Learner Analysis

Case (1975) has suggested that teaching decisions be based upon not only the tasks presented within the curriculum, but also upon those student characteristics which may be necessary to satisfactory performance in the curriculum. Case suggests that educators perform the following steps in this process: 1) analyze tasks to determine the steps and skills involved, 2) evaluate the errors students make, looking most particularly for clusters of common errors or difficulties, and 3) if necessary, redesign tasks changing demands, sequence, or size of steps between desired learning and present abilities. Thiagarajan (1971) has also advocated the use of learner analysis procedures. Thiagarajan, however, suggests that a learner analysis be completed in conjunction with task analysis before the task is introduced to a student; that is, learner analysis should be utilized for initial introduction of tasks at the levels and in the ways appropriate to the individual. Learner analysis is also an ongoing process which involves synthesis of cumulative information concerning students. This information is central to decision making concerning how and when to introduce specific topics for the individual student.

Learner analysis can cover any of the following areas:

1. Subject matter competence - concepts and operations mastered, error analysis of previously mastered tasks;
2. language style - spoken and written language abilities and disabilities;
3. vocabulary level - receptive and expressive vocabulary;

4. learning style strengths and weaknesses - e.g., retention of information presented in written versus oral form;

5. behaviors which may interfere with learning - e.g., self-stimulation, off task behavior such as talking with peers inappropriately;

6. behaviors which may assist the learning process - e.g., increased attention when task is structured, when prompting used, when specific reinforcers are provided;

7. student attitude and motivation - towards school, towards learning, and towards specific curriculum content;

8. student's interaction with peers - sensitivity to peer influence, status within peer groups;

9. student interests;

10. home and community factors influencing student performance - disorganizing factors as well as motivating factors;

11. cultural background - how well matched with the goals and objectives of the curriculum.

Teachers can develop hypotheses about the best curriculum/pupil match through interviews with the students or previous teachers, interviews with parents, observations of students, current assessment of pupil abilities, interest inventories, and analysis of materials being used successfully (and unsuccessfully) as they relate to the aforementioned areas of learner analysis. A useful way to test such hypotheses about what might be the best curriculum match is to try a student in differently structured programs, and note his/her progress in each. In such a way a teacher can often gain needed information about the student's abilities and special instructional needs.

Activity for Learner, #1

Choose a student you are currently observing or teaching who exhibits problems academically and perhaps also behaviorally. Review the list of areas covered in the preceding section on learner analysis and the one or two areas which, in your

current understanding of the student, best identify his problems. Also examine the list and select at least one of that student's strengths. Taking problems and strengths into account, plan alternative ways to present a unit which is scheduled within the next few weeks. Try at least two programs, including the standard approach which would otherwise be used and another which seems appropriate to the student's skills and avoids or minimizes problem areas. Instruct the student to use the alternative approach either as a homework activity or try alternating it with the standard approach for part of the lesson. Evaluate the effectiveness of each procedure, compare results obtained, and make recommendations for further programming.

An example. Assume a student performs poorly on written assignments, has a low level of motivation in school, and is easily influenced by friends, one of whom luckily happens to do well in your class. Try pairing this student, and perhaps others, with selected friends as they complete a written report together.

Curriculum Analysis

Curriculum analysis refers to the systematic comparison of the learner to the specific demands placed upon the student by the curriculum. In curriculum analysis, the educator analyzes a student's strengths and weaknesses, comparing these to the demands of a particular curriculum. If there is a mismatch between the individual and the classroom curriculum, modification of the school's curriculum to meet the right of an individual to an appropriate education is essential.

The type of curriculum modification seen as most appropriate will be determined by the desired improvement over the standard curriculum. Lamlie (1980) has outlined a number of questions teachers may ask about a standard curriculum that help to

suggest appropriate modification. These questions include:

1. What if there are too many items, pages, or questions?
2. What if there is not enough repetition?
3. What if a lack of feedback results in problems when students use materials independently?
4. What if the visual presentation is too confusing?
5. What if students do not remember or understand the directions?
6. What if the material, lesson, or assignment is not interesting?
7. What if the product is not durable?
8. What if the material/lesson moves too rapidly?
9. What if the lesson is too complex?
10. What if the presentation of skills/concepts is too brief and choppy?

Several types of curriculum modifications are identifiable. Research to date has not clearly demonstrated the superiority of any one particular type of curriculum modification. However, in general, all modifications are supported by the indication that the best available predictor of student learning is the match between student "cognitive entry characteristics" (knowledge, abilities, and skills) and the particular task the student is being taught (Bloom, 1980). The success of each attempt to personalize a student's education through curriculum alteration can be recorded as each modification is systematically tried.

While there is no one best curriculum modification, there are a number of general methods that have been found useful. Curricular strategies addressing the problems raised in the preceding section follow five general types of modifications (Howell et al., 1979):

1. Eliminate or reduce some of the areas in the curriculum;

2. Expect that students will not learn the material as well as the average student.

3. Provide an alternative curriculum with different content;

4. Provide a slow curriculum which assures that students will have progressed through the first part of the curriculum and not have to master advanced areas;

5. Eliminate, first of all, the nonessentials in each curricular area.

Three other procedures for modifying curriculum through modifying instructional tactics can also be identified:

6. Provide a parallel curriculum covering as nearly as possible the same subject matter, but varying delivery and level;

7. Provide the same curriculum as for the rest of the class but with supplemental activities/programs to meet special needs; and

8. Provide adjusted materials and/or response formats to accommodate special needs of individual students.

In addition, any of these methods can be used in conjunction with others or can vary according to a student's special needs in different curriculum areas. Each of these methods of curriculum modification is elaborated in the following section and depicted in Figure 1.

1. Eliminate or reduce the subjects in the student's curriculum. At times in meeting the most important needs of a student, the teacher needs to alter the typical schedule followed by peers. For example, two students with serious reading problems may be provided with supplementary instruction during the time normally allotted for music or art. In making this choice, the teacher has deemed additional reading instruction to be of greater value to the student than the traditional amount of music or art instruction. Such decisions may be effective for attempting more rapid short-term goals; however, these effects

must be weighed against the loss of the other subjects or the exposure to a normal curriculum. Additionally the value of such decisions for long-term adjustments must be questioned.

2. Develop or identify an alternative curriculum. At times students have needs which cannot be adequately met by the normal school curriculum or the students lack the prerequisite skills to profit from that curriculum. For example, students unable to identify either the names or sounds of letters will be at a serious disadvantage in many basal approaches to reading. If the student has not mastered the prerequisite skills then that student will continue to have difficulties as she/he proceeds through the curriculum. Often teachers set students up for failure by beginning instruction at a level which is beyond the student's level of proficiency. For these students an alternative curriculum, focusing on the prerequisites to a specific content area, is necessary. Alternative curricula need to be personalized rather than be adopted for all students with a particular label (such as LD or MR curricula). Alternative curricula should be implemented only in those areas in which the student needs instruction on a different level. Criterion referenced tests (both published and informal teacher designed tests) are often quick to administer and will provide the needed information on the student's current ability within a subject area (cf. Hofmeister & Preston's module on curriculum based assessment in this series; cf. also Howell et al., 1979; Salvia & Ysseldyke, 1978; Wallace & Larson, 1978).

3. Altered expectations for the quantity or quality of work. Whether because of physical, visual, perceptual handicaps or because of general lack of skills,

many students are unable to keep up with the standard pace of responses required in the classroom. A simple and often effective modification for such students is to lessen the quantity of work required. For example, a nonpublic agreement can be made with a particular student to the effect that he/she will only be responsible for odd-numbered problems from the textbook. Similarly standards for written assignments can be lessened somewhat for students with particular difficulties in penmanship or composition.

While the strategy of reduced expectations has been employed quite often in the regular classroom, there are some dangers involved with relying upon this system. First of all, many of the children who work more slowly need more not less practice than their peers. Secondly, lowering standards may mean that skill mastery never occurs, producing high school graduates with serious skill deficits.

In addition to considering reduced expectations in terms of pace, quantity or quality of work, the educator may wish to provide more opportunities for practice. While these two approaches may seem contradictory in nature, each has value at different points in the student's learning. When students are just acquiring a new skill, extra rote practice can help to establish the initial response. To be useful, however, this practice should be much more intense than is typically observed in traditional classrooms. For example, students practicing math computational skills using a Precision Teaching approach may complete 20-30 drill sheets with 50-100 problems per page during a twenty-minute math session. Often students can work much more quickly than they are usually expected to work by their teachers, given an appropriate level of task difficulty. For the secondary student who continues to have difficulty

with school it may be useful for this drill to occur in the resource room with basic skills, with a reduction in the number and length of written assignments in the mainstreamed classroom. Such procedures often encourage the student to practice needed remedial skills, thereby gaining proficiency in fundamental areas while learning the content of the subject matter under reduced pressure.

4. Teaching subject matter more slowly. Too often in American schools students who have not yet learned as rapidly as their peers have failed to complete instructional materials which contained prerequisites for instruction the following year. If teachers opt to teach particular students or groups of students at a slower pace, then coordination within a curriculum is needed to insure that students begin instruction at the appropriate level the following year. Fortunately more and more materials are being developed which are individually paced. Such materials eliminate the need to organize pacing modifications since varying pacing with the individual student is the rule, not the exception to the instructional strategy. Teachers can make materials intended for individualized pacing even more appropriate by monitoring student progress and permitting students to move through the curriculum only as skills are mastered.

Teachers may also be able to provide for individual student needs by altering the pacing of materials or time requirements for completion of assignments in the normal curriculum. By dividing material into small, sequential steps teachers can be assured that students have a satisfactory grasp of small pieces of information before continuing onto larger chunks of material. As students progress through materials, more distractors or irrelevant information can be added and materials can gradually be made more difficult.

5. Teaching only the most essential subject matter (or expecting students to learn only the most essential content). One of the best alternatives available to a teacher who is trying to find enough time to teach a particular learner essential computational skills, for example, is the elimination of parts of a math curriculum that are nonessential. A teacher who realizes that a student needs more work in division might plan for that student to continue on with division while most of his/her peers complete a series of exercises on Roman numerals. A teacher can also determine which objectives or content within a unit have highest priority. Criteria for determining which content will be most useful to the student in various environments (an ecological approach; O'Connell, 1980) can be employed in making programming decisions.

   Teachers can also decide to teach all of the content to all students, but to expect particular students to be responsible for only the content that he/she has stressed. In applying such a strategy it is critical that testing cover only this same content which has been emphasized to the student.

6. Developing a parallel curriculum. Frequently the academic demands of a classroom are such that there are students for whom the standard curriculum is inappropriate. For example, a student with a fourth-grade reading ability in a sophomore history class will probably benefit little from materials and assignments presented exclusively at the tenth-grade level. This is particularly the case if instruction relies heavily upon reading and writing assignments. The parallel curricula cover the same subject matter, but build a personalized curriculum around alternative texts, assignments and student evaluation methods which are appropriate to the student's abilities. In the preceding history

example a fourth-grade text on American history could be used with assignments presented and answered orally.

In using parallel curricula it is particularly important for the regular classroom teacher to structure some group activities which include the student with learning problems. The parallel curriculum should not be implemented as a separate program but rather provide for integration through class discussions which include questions answerable by the student with learning problems. Group projects can also be designed to include all students even though some may be operating from parallel curricula (cf. the module by Johnson & Johnson in this series).

7. Supplemented curriculum. A supplemented curriculum is one which allows a student with special needs to participate in the normal curriculum of the school while meeting those special needs in a limited number of focused, supplemental instructional sessions outside the regular classroom. Examples of such sessions include speech and language therapy, remedial reading, scheduled counseling sessions, and tutorials.

The curriculum can also be supplemented by providing additional instruction in organizational and study skills. Such skills as proofreading, editing, note taking, outlining, and listening for important points during lectures can assist many students who are being mainstreamed. Additionally, teaching such skills as locating and highlighting directions teach self-responsibility rather than merely providing a compensatory procedure which relies upon others. Supplemented curricula are most useful for those students with specific needs that cannot be met through merely modifying the standard class curricula within the regular classroom environment.

8. Adjusted materials and/or response modes. For many special needs students, especially those with sensory and physical handicaps, the normal classroom materials, activities, and response modes are inadequate or inappropriate. These students may need to be provided with texts with larger type, worksheets with larger writing, or audiovisual aids such as audiotapes to replace reading assignments. Program format may also be altered to reduce the figure ground difficulties by folding pages in half or redesigning the format so that fewer items are presented per page. In the case of the senorily or physically handicapped student, special education resource personnel will be available to assist the teacher in meeting the needs of the students.

Adjusted materials and response modes are also effective with students who are not generally perceived to be handicapped. There are many examples of adjustments to the curriculum that teachers can make to personalize curricula. Many "normal" students with handwriting difficulties benefit from being given multiple-choice formats for some of their daily work. Other students who have difficulty following directions benefit from a teacher's highlighting directions throughout a book. Adjusting materials and response mode is often the most common and the easiest of the methods of curriculum modification. With such simple modifications students are often able to keep pace with their peers being taught from the standard curriculum, thereby preventing the accumulated deficiencies which can occur with a "slowed down" or "lowered expectations" curriculum These eight basic types of modification are shown in Figure 1.

In addition to changing the type of input or required output (book versus audiotape; written versus oral) the response requirements can also be changed so that the material is restructured for a great deal of active responding. Materials

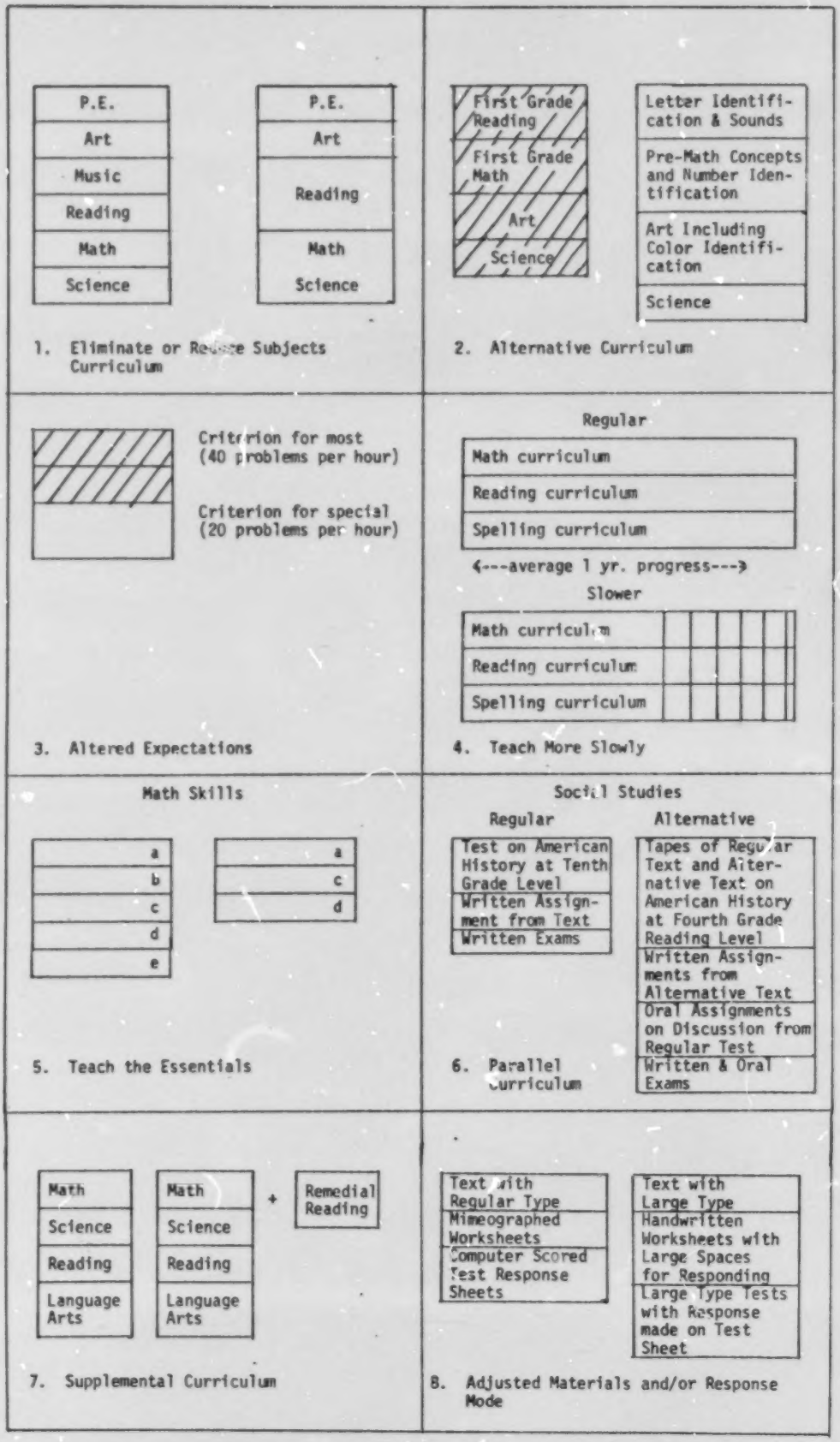

Figure 1. Major Types of Curriculum Modification

which are designed for frequent student response such as programmed instruction or experience based curricula provide many opportunities for the teacher to observe the student's responding and to note early on any problems the student may be encountering. Reprogramming materials so that more drill or practice is included or so that a more "errorless learning" format is utilized may also be useful. Both published and teacher made materials exist with these features (programmed instruction, active responding, drill emphasis, and errorless learning features).

Other aspects of curriculum assessment and alteration include the readability, the vocabulary, and the inference requirements of the study material provided to students. Readability refers to the linguistic structure of reading matter and can be computed by a variety of formulas, one of which has been developed by Fry (1977) and is shown on page 41. Readability formulas take into account either the familiarity of vocabulary, the length of sentences, or the number of syllables or letters in words. Formulas are used to compute a rough estimate of the grade level equivalent of reading material and, therefore, they contain all the faults of grade level scoring. Often the grade level in a teacher's manual for a text does not match the readability level computed, suggesting a need to utilize supplementary materials when the discrepancy between the demands of the materials and the ability of a student(s) is too great. Although it is time consuming to rewrite sections of texts, teachers may wish to decrease the estimated readability level by shortening sentence length or decreasing word difficulty. By pooling resources teachers within a district frequently work together on such projects thereby increasing the efficiency of such a strategy.

Memory for vocabulary or word meanings and the drawing of inferences from content have been identified as the two most important factors explaining reading

comprehension in one study of 12th grade students (Davis, 1968). Vocabulary is often specialized and technical in content areas and for many students requires extra drill prior to beginning a unit. Simple strategies for assisting students with inadequate vocabularies include arranging word lists in terms of priority words so that students focus on learning the meanings of the most important words in a unit.

Drawing inferences from content is a skill often demanded in comprehension questions asked on an exam or at the end of a unit. Comprehension questions can either be literal, involving recognition, recall or simple translation; inferential, involving application, analysis, or synthesis; or evaluative, involving criticizing or giving opinions (Santos Classification Scheme in Forgan & Mangrum, 1976). Of course, literal questions will be somewhat easier for students to answer but also require skills in skimming and recognizing similar words. Teachers may elect to cut down on the number of inferential questions asked of students whose conceptual ability is relatively low. In such instances, teachers should be encouraged to select the top priority inferential questions and give students some help and practice in inferential reasoning.

Another related suggestion mentioned by Howell et al., (1979) is to match learner needs by changing directions for the learning task and feedback to the learner. Often changes in directions given, careful explanation of terms, use of more examples, and supplementary use of audiovisual aids (such as overhead projectors and accompanying filmstrips) may be sufficient to assist students. Using more frequent praise or self-correcting materials can also accelerate learning for many students. Materials such as manipulocks or Sullivan Reading (or other programmed series) are especially useful in this regard. The use of special

reinforcers, tokens, points, or peer correction of work can assist in providing the extra reinforcement or immediate feedback needed. (Several modules in this series address these and other forms of reinforcing students' performance.)

Learning may also be facilitated by adding supervised study: use of computers, audiotapes, calculators, or other teaching machines; and/or peer and cross-age tutors. To improve study habits teachers may wish to instruct students in study or problem solving skills. "Flexible grouping" which includes the formation of short term groups to complete specific tasks can also provide a study vehicle for many students. Teachers may wish to group students in different ways for different tasks, sometimes grouping by ability level and other times including a balance of leaders-followers from among ability levels. Each of these strategies may enable the student with learning problems to proceed at the same pace as the rest of the class yet require relatively little teacher preparation for the modification.

Determining which strategy to use

Raison (1979) has compared the effort and effects of slight versus dramatic and total curriculum revisions. She points out that "making major curriculum changes during a school year is like trying to cross a bridge while you're building it." Rewriting passages, searching out alternative texts, breaking down complex tasks, all demand time and thought that is hard to find while keeping up with the daily demands of teaching. Substantial modifications are generally most successful when they are planned over a relatively long period of time and/or involve more than one curriculum modifier. Whenever possible teachers should search for already developed materials rather than designing the new materials themselves. Instructional materials centers, teaching friends in other districts, special

education, remedial reading, Title I, and English as a second language classrooms, educational conferences, and college and universities are often good sources for locating current materials.

The next section of this module presents two formats for analyzing curriculum modification needs: 1) curriculum evaluation, an indepth approach, and 2) an abbreviated checklist of curriculum dimensions. Deciding when and what to modify will partly be dictated by the kinds of problems students are exhibiting in class and by anticipated difficulties with alternative assignments. Deciding what to modify may also be dictated by practicalities such as time and the availability of help from the resource teacher. The following two sections will assist the reader in practicing curriculum evaluation and modification.

PROCEDURES FOR PERSONALIZING CURRICULA

Curriculum Evaluation, An Indepth Approach

For the successful development of quality educational experiences for all children, teachers need two curriculum evaluation skills: 1) skills in evaluating the quality of existing curricula, and 2) skills in evaluating existing curricula in relationship to the needs and skills of individual students. Included in Appendix 2 of this module is an example of an extensive system for curriculum evaluation based upon the following narrative. Clearly students in teacher preparation programs should have experiences in developing such a list of criteria for evaluating curriculum materials for themselves and in actually carrying out such an evaluation; after all curriculum materials are the tools of the teaching trade.

Larken and Shaver (1969) have advocated the use of value analysis, a priority weighing process of curriculum evaluation. They contend that the qualities of curriculum materials must be evaluated against the qualities seen as desirable by those evaluating them. For example, three criteria relevant to curriculum goals might be: provides sufficient opportunities for practice, uses concrete materials, and provides immediate feedback to the learner. To perform a value analysis the evaluator would: 1) list the criteria for the desired curriculum, 2) identify priorities within the criteria, and 3) determine the weight to be given each item (criteria). In the example presented, the teacher may decide that for a particular student or class, he/she will place the highest premium on "providing opportunities for practice" and, therefore, the teacher would assign a x3 to that category, and perhaps a x2 to using concrete materials, and, for example, only a x1 to providing feedback (placing a greater weight on those materials providing sufficient opportunity for practice). Some areas of the sample checklist might be omitted from some teachers' checklists, other ones might be added. Obviously, teachers need to develop a good sense of how these "value areas" relate to what students actually learn.

Value analysis can usefully be subdivided into analyses of three major components of classroom learning: student response, instructional programming aspects, and feedback/reinforcement provisions. Some desirable qualities which might be evaluated by students in teacher education programs follow:

Desired Qualities of Curriculum Materials and Activities for Heterogeneous Classrooms

I. Qualities Related to Student Responding

Objectives: Are the student outcomes as identified through the curriculum objectives compatible with student needs? Are the student outcomes identified

through the curriculum objectives compatible with objectives of the school district? Does the curriculum focus on important skills and provide accurate information, i.e., if students learn what is taught will they know what they need to know? What are the cognitive and/or skill objectives for the curriculum? Are they the ones considered most important for the students being placed in the curriculum?

Response Content: Does the curriculum provide for a sufficiently wide range of performance among students? Are the skills required in responding appropriate for age level? Are students who may be working below or above grade level asked to respond in ways appropriate to their age (e.g., are 10 year olds using primer materials asked to use crayons in their responses?)? Do responses required of students develop skills other than those directly called for (e.g., writing, spelling, reading, oral communication)? Does the curriculum provide students with an opportunity to apply learning to affective parts of their lives (e.g., are opportunities provided for students to learn how to cooperate, to express emotional reactions, to form moral values?)? Does the curriculum allow students opportunities to develop personal interests through enrichment activities?

Response Mode: What motor and verbal skills are required to complete the curricula? Are options provided for students with physical impairments or difficulties with writing or verbalizing? Is the response mode stressed in the program the same one which will be required for terminal use of the skill (e.g., in spelling do students practice writing words without a visual pattern or, rather, are they involved in selecting the correctly spelled word, writing the word phonetically, or using the word in crossword puzzles--all instances of practicing a skill that is not often needed)?

Response Assessment: Are provisions made for assessing an individual's skills as a means for determining placement in the curriculum sequence? Are prerequisite skills, needed for performance in the curriculum, stated or easily assessed? Cf. the Hofmeister and Preston module in the series regarding this critical aspect of a well-developed curriculum.

Acquisition Level Responding: Do curriculum materials provide for adequate opportunities to practice desired skills? If not, are supplemental materials available or easily developed for students needing more repetition? Is the curriculum designed to develop a high rate of student involvement (active responding)? Does the curriculum structure skill development in appropriate increments?

Proficiency Level Responding: Does the curriculum make provision for teachers and students to keep records of performance over time? Does the curriculum provide for adequate instruction in the prerequisites required in subsequent educational experiences within the school district?

Generalization and Adaptation of Responding: In addition to the specific skills and knowledge on which it focuses, does the curriculum provide for general skills and information which are useful in the student's present or future? Does the curriculum provide for the application of skills and concepts to multiple contexts and problems (does it promote generalization of concepts?)? Does the curriculum relate present tasks to previously mastered interrelated and interdependent skills?

II. Instructional and Programming Aspects

Philosophy and Objectives: Is the educational philosophy promoted by the curriculum congruent with that of those teaching its content? If not, is compromise possible? Are the objectives stated for the curriculum likely to be realized by the content provided? Will this occur for all students?

Physical Characteristics: Do the curriculum materials have sufficient durability, reusability, or potential for modification to meet the needs of the classroom?

Type: Are the curriculum materials appropriate to the cultural background of the students who will use them? Is the vocabulary level congruent with student skill level? Is the format appropriate for the students (including a reasonable number of items per page; visual clarity; appropriate use of pictures, figures, and tables)?

Cost: Is the cost of implementing the curriculum manageable within the budget for total available funds for all educational programming? Is the material cost effective (worth the cost)?

Field Testing: Has the curriculum been field-tested or implemented in other settings? What are the results?

Delivery: Does the curriculum structure provide for both group and individual instruction? Does the curriculum provide for opportunities to interact with peers on subjects of importance and interest to students of that particular developmental level? Are instructional activities effectively sequenced? Is instructional time used on specific learning activities (coloring activities which are part of math worksheets would not be seen as

"math activities")? Are the space, time, and equipment necessary for delivering the content of the curriculum available in the context for which it is being considered? Are special skills necessary or beneficial in implementing the curriculum and are those possessed by those who must implement it? If not, would training be helpful and is it available? Are clear easily understood directions provided for both group and individualized activities? Are suggestions for modification for individual learners included in the teachers' manual?

Activity for Learner, #2

Appendix 2 contains a curriculum evaluation checklist based upon the preceding discussion. Select two programs which cover the same content and evaluate them using this checklist. You may wish to utilize a value analysis procedure and place more weight on certain categories. After you have completed the evaluations, determine which of the programs best meets your needs and write a one-paragraph description explaining your decision. You may wish to evaluate either one grade level or an entire series.

An Abbreviated Checklist of Curricular Dimensions

The following checklist reiterates curriculum modification strategies discussed earlier in this module. The list is organized from simple strategies such as shortening assignments or providing extra practice to more complex strategies which require additional teacher preparation. In utilizing this hierarchy the teacher needs to evaluate not only the amount of time involved in implementing the revision but also the effects and possible problems which may result from particular modifications.

1. Amount - including decisions as to what content should receive priority and how long assignments should be;
2. Pace - including both how slow to go as well as how much repetition and practice there should be;
3. Standards - what criteria should be used to decide what constitutes passing or achieving minimal competency;
4. Perceptual Aspects - including both how the material is presented, i.e., either orally or in written form, as well as how the student is asked to respond;
5. Structure - including how clearly directions are given and whether feedback about student performance is immediate and clear;
6. Conceptual Complexity - including the level at which student comprehension is assessed, the level of abstraction of the subject matter itself, and the degree to which concrete examples are provided to the student;
7. Required Level of Knowledge or Skill - including what prerequisite knowledge of the subject matter is necessary and what reading level and study skills are assumed of the learner.

The reader may wish to refer to this abbreviated checklist in completing the following exercises.

Activity for Learner, #3

Pages 38 and 39 contain an example of a worksheet before and after alterations. In the spaces below identify which of the curriculum modification strategies listed in Figure 1, page 26 have been utilized.

1. Amount_____

2. Pace_____

3. Standards_____

4. Perceptual aspects_____

5. Structure_____

6. Conceptual complexity_____

7. Required level of Knowledge or Skill_____

Work/Study Before Alterations, Activity #3

Before

A. Understanding What You Have Read

1. An expedition headed by _____ and _____ explored the newly purchased Louisiana Territory.

2. Ratify means_____.

3. Napoleon's dream of an empire in the New World a. was his primary reason for selling Louisiana b. was destroyed by the Spanish c. had support from the U.S. d. was destroyed by a revolt in Santo Domingo.

4. Cede means_____.

5. In 1801 the House of Representatives selected _____ to be President after a tie occurred in the Electoral College.

6. In 1800 the Territory of Louisiana
___ was ceded by Spain to England
___ was ceded by England to Spain
___ was ceded by France to Spain

7. The Louisiana Territory was ceded by _____ to _____ in a secret treaty in 1800.

8. Justify means_____.

Work/Study After Alterations, Activity #3

After

A. Define the following terms:

1. Ratify_____

_____

2. Cede_____

_____

3. Justify_____

_____

B. Fill-in the blanks with the correct terms

Lewis	Jefferson	Spain
Clark	France	

1. An expedition headed by _____ and _____ explored the newly purchased Louisiana Territory.

2. In 1801 the House of Representatives selected _____ to be President after a tie occurred in the Electoral College.

3. The Louisiana Territory was ceded by _____ to _____ in a secret treaty in 1800.

C. Put an X by the statement which is correct.

1. Napoleon's dream of an empire in the New World

_____ was his primary reason for selling Louisiana

_____ was destroyed by a revolt in Santo Domingo

2. In 1800 the Territory of Louisiana

_____ was ceded by Spain to France

_____ was ceded by the United States to England

Activity for Learner, #4

Determine the readability level of the passage below using the directions and graph on page 41. (Instead of choosing three 100 word passages, one passage is being used here.) After determining readability on a separate sheet of paper, rewrite the passage using shorter words and sentences to obtain a passage written for a student reading two grade levels lower than the passage's readability level.

Number of syllables = _____

Number of sentences = _____

Readability = _____

Activity 4

The Dilemma of No Kindling

Often late in the winter season one is confronted with the predicament of the kindling dwindling in the woodbin. Like as not, it will be on a particularly dreary rainy night when the fire builder discovers a complete absence of kindling. The firebuilder can avoid despair and chilled bones by resorting to the pile of newspapers beside the fireplace. Armed with only a ball of twine, scissors, and two dexterous hands, the firebuilder can wrap the newspaper into small imitation logs and tie them with string. Once accomplished, these kindling derivatives may be placed under logs in the usual manner. In such a way one can forever circumvent the disappointment of lack of twigs and sticks.

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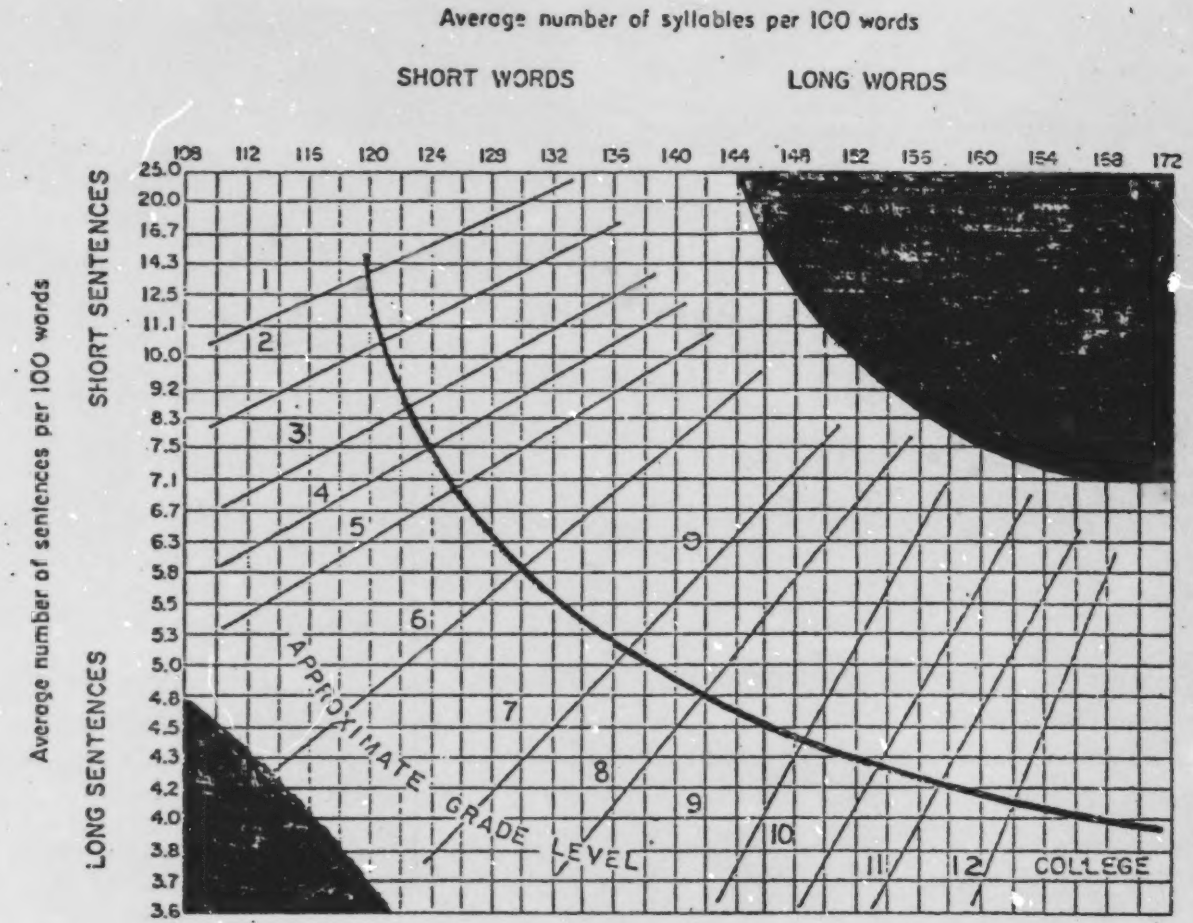
GRAPH FOR ESTIMATING READABILITY

by Edward Fry, Rutgers University Reading Center,
New Brunswick, New Jersey



DIRECTIONS: Randomly select three 100-word passages from a book or an article. Plot the average number of syllables and the average number of sentences per 100 words on the graph to determine the grade level of the material. Choose more passages per book if great variability is observed, and conclude that the book has uneven readability. Few books will fall in the gray area, but when they do, grade level scores are invalid.
Use with grade > third

EXAMPLE:

	SYLLABLES	SENTENCES
1st Hundred Words	124	6.6
2nd Hundred Words	141	5.5
3rd Hundred Words	158	6.8
AVERAGE	141	6.3

READABILITY 7th GRADE (see dot plotted on graph)

For further information and validity data, see the April, 1968 Journal of Reading and the March, 1969 Reading Teacher.

Activity for Learner, #5

Following is an outline of a chapter of a commonly used social studies text with a brief explanation of the text's basic objective and a description of various aspects of the chapter. After reading the outline and description of the chapter a) summarize the kinds of demands the chapter places on students keeping in mind dimensions of curriculum modification, and b) list a few ways in which you might modify the chapter for low achieving (reading at 1/2 the grade level for which the text was written) and/or poorly motivated students. Using this or some other review as a model, c) do your own analysis of a text book, and d) suggest desirable modifications for low achieving and/or poorly motivated students (or explain why the text book meets the needs of such students).

Magruder's American Government (used in tenth grade). This books basic objective is "to describe, analyze, and explain the American system of government" (p. 5). The author further writes that the book is intended "to encourage inquiry and discovery by students--to prompt them to engage in that most difficult, and rewarding of all human activities: Thinking" (p. 6). Description, analysis, and explanation seem to be straightforward objectives of communicating factual information. The lofty second intention is closer to the idea of critical thinking or evaluation.

The organizational stucture of the first chapter, entitled "Modern Political and Economic Systems" follows in outline form.

I. Epigram: "He who considers things in their first growth, whether a state or anything else, will obtain the best view of them" Aristotle

II. Beginning questions

III. Government in the world today

A. The State - four essential characteristics:

1. Population
2. Territory
3. Sovereignty
4. Government

B. Origins of the state

1. Force theory
2. Evolutionary theory
3. Divine right
4. Social contract

C. Forms of government - classified by:

1. Geographic distribution of power
   a. unitary
   b. federal
   c. confederate
2. Relationship between legislative and executive
   a. presidential
3. Number who may participate
   a. dictatorship
   b. democracy

D. Basic concepts of democracy

1. Fundamental worth of individual
2. Equality of all persons
3. Majority rule and minority rights
4. Necessity of compromise
5. Individual freedom

IV. Capitalism, socialism, communism

A. Capitalism

1. Basic nature of capitalistic system
2. Laissez-faire theory
3. A mixed economy

B. Socialism

C. Communism

1. Communist theory

a. theory of history
b. labor theory of value
c. nature of the state
d. dictatorship of the proletariat

2. Evaluation of communism

V. Case study of Declaration of Independence - with questions

VI. Chapter summary

VII. Questions for review and further inquiry

Activity #5, continued

Content. As is obvious from the outline, the body of the text (covering 21 pages) follows the basic objective of conveying a great deal of factual information. It is organized as a series of definitions and concept characteristics, proceeding from general to specific topics. The text contains some rather thinly veiled propaganda in the choice of words and implications when describing communism. For instance the phrase, "it is claimed" is used frequently and the text often points out where communistic theory went wrong. Democracy in the United States, in comparison, is portrayed in much more glowing terms. Inquiry about either system of government does not appear to be encouraged in the text.

Questions. The beginning questions, in contrast, appear to encourage conceptual thinking. The author asks students, for example, to react to the quote, "if men were angels no government would be necessary." This question involves hypothetical thinking and reasoning about the purpose of government. The questions might be best described as open-ended beginning motivators; the ideas are not alluded to within the text, nor do they set a purpose for reading. The function of the epigram, also requiring analogical reasoning about the correspondence between growth in nature and growth of a state, appears to be the same. If the questions are designed as motivators or stimulating exercises in thinking, they assume an interest in reflective abstraction.

Format. The text is easily outlined. Main headings are highlighted in blue print, subheadings in bold faced type, sub-subheadings in all caps, and further headings in italics. The format is very consistent. A variety of pictures, two flow charts, and a cartoon are also included.

Vocabulary. Forty-eight key words are italicized and, for the most part, defined in the body of the text. Approximately half of the vocabulary are words in the headings outlined in this section. However, there are many other specialized words such as "evolutionary socialists," and "indirect democracy" in the body of the text. If one terms key words the labels for concepts, this chapter is "conceptually stuffed" (Hafner, 1977). Unless the reader already possesses considerably background knowledge of the content, a large amount of time could be spent defining terms. Studying for an exam could place a heavy memory load on the student.

Readability. Readability of this chapter using Fry's formula was eleventh grade. The range of grade level, however, was from ninth to sixteenth, so some portions of the text would likely be considerably more difficult for tenth graders. Not only are many vocabulary words in each chapter, but the sentences and words are long.

End of the Chapter Questions. At the end of the chapters were 18 questions for review, five for further inquiry and four questions about a case study. Of the first group of 18, 10 of the questions involved recall and recognition, many of these using the exact phrase as the text (such as what are the "four essential characteristics" of a state)? Seven more of these 18 involved what has been termed "translation" or keeping the idea basically unchanged yet using different words or paraphrasing (see the "Classification Scheme for Reading Questions" developed by Nativadad Santos in Forgan & Mangrum, 1976). For example the question, "why is the social contrast theory so significant in terms of the development of our own political system?" uses the words "significant" and "political system" whereas the text used "important" and "governmental system" in that particular section. A

total of 17 of the 18 questions involved defining exactly what was in the text, or literal, explicit comprehension. This emphasis matches the basic objectives and organizational structure of the chapter.

The further inquiry questions within the chapter were either opinion questions (what Santos terms synthesis questions) or evaluation questions. Students were asked to express opinions on new quotes, related, but not based on, extensions of the text, much like the beginning questions. In the evaluation questions no connection is made between the text and the concept, and the student must synthesize the information independently. Two of the four case study questions asked the student to analyze or infer the basic principles of the Declaration of Independence and deduce whether it proclaimed "a right to revolution." On the whole, comprehension questions required students to either locate and repeat factual information or to arrive at their own conclusions with little application or analysis between these steps.

Demands the chapter places upon students:

_____

_____

_____

Modifications you would make:

_____

_____

_____

SOCIAL ASPECTS OF MODIFICATION

Even when a seemingly fitting modification is chosen, the result may not always be satisfactory. Students at all age levels, kindergarten through high school are sensitive to peer opinion. After a teacher has taken the time to prepare an alternative science unit and quiz, the student may refuse to be a part of it. Adolescents particularly want to do what everyone else is doing; students do not want to appear different from others. These students may also deny that they have or will have any problems with the content. How can a teacher reduce or eliminate the frustration that results when a student is uncooperative? One way is to try to negotiate contracts of agreements with students ahead of time. Sitting down with a student and discussing upcoming lessons, or the text to be used, can head off later refusals to accept non-standard materials. This may include negotiation on the teacher's part; the student may need to try what the class is doing despite the doubts the teacher may have about the student's ability to perform the task. The teacher needs to offer a reality test of the student's abilities without an "I told you so" attitude if he/she fails. Modifications may be more readily accepted by students after such a trial. Of course, students may also demonstrate more ability than anticipated.

Some of the most acceptable modifications are made without singling out a particular student. An easier level science quiz can be offered to all who wish to take it, with differential weighting of scores. A group spelling test can be given that is ordered by difficulty with subgroups of students responsible for only selected words. Or, for spelling, students may be responsible for the same number of words but with specific words varying according to spelling abilities. The greater the number of curriculum alternatives available to the class as a whole,

and the more these options are interwoven into the structure of the class, the more easily modifications will be accepted by individuals.

Teachers must also be prepared for students who will not accept curriculum alternatives that would clearly be to their academic benefit. Nonacceptance of alternatives may be expressed directly or indirectly. Alternative texts may continually get lost or misplaced. Students may not pay attention or even seem to "try" when placed in the lowest level math groups or placed in individualized programmed learning series. Teachers should be sensitive to such signs of resistance and be able to suggest alternative modifications when one strategy doesn't work. Involving students in planning their own programs will reduce resistance as will the message the teacher conveys when introducing a modified program. At times behavior management plans with contingencies can be developed for students with the help of a resource room teacher. Often as students begin to experience the success of a correct program these behavioral incentives can be faded away with good results. Monitoring progress such as the amount of writing accomplished or number of assignments completed (and perhaps charting this progress) can also help both teachers and students to better appreciate the advantages of the program revisions.

Alternative curricula may produce discomfort for some teachers because of the issue of standards and fairness, especially in terms of grades. Other students in the class may question why one student must complete only one-half an assignment. When regular educators are asked to modify their curricula, they are, in fact, asked to modify standards as well. This poses problems in systems not structured to evaluate achievement in terms of the individual. Teachers may wish to consider giving two grades on report cards, one grade reflecting individual growth and one

reflecting comparative growth. Two separate effort and achievement grades may be used, or regular educators can consult with resource teachers and arrive at a combined resource/regular class grade. Again, the more the system is modified for everyone the fewer the problems of differential treatment arise. If grading is individualized for everyone, no special case needs to be made for students with modified programs.

Activity for Learner, #6

Choose a text which is used in a classroom and use the following "Suggestions on How to Modify a Section of a Text" to complete the following worksheet. After modifying the section of text, try the modification with a few students, keeping in mind social aspects of modification. Compare their performance before and after the modification was implemented. Ask students to describe their reactions to the modifications and to give further suggestions.

SUGGESTIONS ON HOW TO MODIFY A SECTION OF A TEXT

1. Start with one chapter which you think is particularly important--modifications take time and may need to be tested out several times before they make a difference.
2. Define the one or two objectives which are top priority in the unit. If they aren't already defined for you--this will serve as a guide in deciding what material to cut or emphasize.
3. Define the most frequent difficulties which the students are having with the unit (no interest, too much information)--see lists of areas under previous section on learner analysis and dimensions of curriculum modification.

4. Determine readability of unit using Fry and compare to problem students' reading level--if large discrepancy exists, may try to find a lower level text, think of taping or listening, or rewrite sections.
5. List vocabulary covered in the unit (may be done for you) and prioritize 2 or 3 words most important for group work or vocabulary worksheets.
6. Preview the typographic format for problems (are subheadings clear, are graphs understandable, etc.) may want to highlight or underline one text to clarify organization.
7. Look at questions at end of unit or chapter and classify them as to what kind of comprehension they require. a) literal, b) inferential, c) evaluative. You may want to just use literal questions with some students, or cut down on the number of literal questions and choose a few inferential ones with cues (or clues to how to find answer).
8. Determine what cognitive demands the unit makes on students in the following areas:
   a) attention/interest - if students don't hold interest, bring in real life examples, supplement with games, etc.
   b) amount of information to remember - if there's too much information, cut down on amount, provide mnemonic aids.
   c) previous knowledge - if students don't have prerequisite knowledge, spend some of unit time on this and only include essential aspect of unit for student.
   d) study skills - if approach to the task is the problem, whole class may benefit from lessons in how to read graph, take notes, make up a study guide ditto.

Overall

As a start, you could work out one alternative reading selection, a short vocabulary worksheet, highlight one section of the text, and have one lower level set of questions for unit.

Worksheet for Activity for Learner #6

1. Title of chapter: _____
2. Top priority objectives:
   a) _____
   b) _____
3. Student's frequent difficulties:
   a) _____
   b) _____
   c) _____
4. Readability = _____
5. Three top priority vocabulary words: _____
   _____
6. Typographic format problems: _____
   _____
7. Number of chapter questions which are:
   _____ literal
   _____ inferential
   _____ evaluative
8. Problems in the following cognitive demands:
9. Changes to be made in chapter
   _____
   _____

Activity for Learner, #7

Select a topic in a content area (e.g., the Civil War, Tom Sawyer). Identify materials and methods that can be used to teach the subject matter to students of widely ranging reading abilities (e.g., different reading materials, audiotapes). Identify sets of mastery questicns and assignments for students that reflect a wide range of writing and reasoning abilities. Identify issues in student evaluation that would arise from personalizing the materials and assignments in teaching the topic (e.g., Do the right to equal treatment and right to appropriate education come into conflict?). Discuss ways that teachers can convey to students the need for variation in the demands of assignments. Suggest ways a teacher can involve all students in discussing a topic when students are working from different materials of differing levels of conceptual complexity.

Activity for Learner, #8

Read the following passage. List three suggestions for revising this passage for a special education student who is two years below grade level in reading comprehension skills.

THE TEETH

Arranged in a semicircle around the center of the mouth cavity are the teeth. Each is especially adapted for a particular kind of work. In adults there are thirty-two teeth, sixteen in each jaw, belonging to four classes according to shape.

The four front teeth on each jaw are incisors (in-sy-zers), which are used for cutting and biting, as in eating an apple. The four long pointed teeth, one on each side of the incisors on each jaw, are the canine teeth, used for tearing. Sometimes they are used for breaking the skin of some tough fruit. Next to the canine teeth, on each side of each jaw, are the premolars, two on each side top

and bottom or eight in all. The premolars and the molars, which are the farthest back in the mouth, are used for grinding food. Some of the molars are called wisdom teeth, which usually grow in between the ages of seventeen and twenty-five. An adult who has not lost any teeth should have thirty-two. How many do you have? Can you name and locate each of your teeth?

Structure of a Tooth. The three main regions of a tooth are the crown, the neck, and the root. The inner cavity, or pulp, contains the nerves and blood vessels. It is surrounded by a bonelike layer called dentine. The crown of the tooth is covered by a layer of enamel which is harder than the dentine. The root is covered by a hard layer of cementum and is held firmly in the jaw by the peridontal membrane.

Suggested revisions.

1) _____

_____

_____

2) _____

_____

_____

3) _____

_____

_____

Activity for Learner, #9

Select a real classroom exam, a real writing assignment, and an actual group lesson. List the problem areas for each using the Abbreviated Curriculum Checklist (pp. 35-36) and modify each accordingly. Implement the modifications with a few students or a class, measure their performance, and ask for feedback.

CONCLUSION

Curriculum modification is a practical topic; it is only mastered and appreciated when a teacher actually does it, i.e., modifies a specific curriculum. Even then, curriculum modification is most forcefully advocated by those who have observed the difference it can make in performance and motivation of students.

The main purpose of curriculum modification is to increase curriculum options within regular education classrooms to accommodate increased variation in students. Special educators also utilize curriculum modification, evaluation, and design procedures as they instruct in resource and self-contained classrooms. The principles presented in this module work well in a variety of circumstances and with a wide range of students. While this module has focused almost entirely on assessing and modifying curricula for students with learning difficulties, the principles are also applicable to student who have already mastered the skills within a curriculum and are otherwise unchallenged by the standard curriculum. As classrooms have become heterogeneous, the ability to assess and modify curricula to meet a wide range of student abilities has become an important part of effective teaching. This module has been developed to outline for teacher educators some of the basic concepts and considerations in developing these skills in teacher preparation programs. However, these skills will be best used in conjunction with

other positive teaching practices, including especially evaluation strategies which serve as feedback mechanisms concerning curriculum adequacy. It is critical that as these procedures are implemented that they are viewed as a dynamic process that will continue to change as students and our society changes.

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Appendix 1

Key to Activities for Learner

Alterations:

#2: 1. like questions clustered together ; adjusted materials

2. directions more specific; adjusted materials

3. adequate space provided ; adjusted response format

4. word bank given -- decreases demands on memory ; adjusted materials

5. limit choices to two in Part C; parallel curriculum

Dimensions:

1. structure and perceptual aspects

2. structure

3. perceptual aspects

4. required level of knowledge

5. amount

#4(a&b) Demands: required high level of knowledge of vocabulary, large amount of vocabulary, some conceptual complexity in beginning questions.

Modifications: drastically cut down on amount of vocabulary, assign only important sections of text such as basic concepts of democracy, do vocabulary lesson prior to chapter reading, etc.

Appendix 2

Curriculum Evaluation Checklist

Curriculum Materials: Publisher: _____
Series: _____
Grade Level: _____
Year: _____ Cost: _____
Content Covered: _____
_____
Population designed for: _____
_____

1. Curriculum Design

   1. Description of theoretical/philosophical basis of curriculum:

_____ developmental _____ task analytical _____ vocational preparation

_____ college preparatory _____ experienced based _____ survival skill

_____ sight word _____ linguistic _____ phonics

_____

2. Statement of curricular philosophy:

_____

_____

_____

_____

_____

3. Curriculum congruent with its stated philosophy?

_____

4. Curricular philosophy congruent with:

   values of community _____

   approach of educators within school district _____

   evaluator's approach _____

   student needs within district _____

5. Objectives stated in behavioral form

   Adequate sequencing of objectives

   _____ task analytical

   _____ developmental

   _____ interrelated

   _____ other: _____

---

6. Inclusiveness of objectives:

   No gaps in sequencing

   If gaps, where? _____

---

7. Objectives from Bloom's taxonomy evident in following domains

   psychomotor _____

   cognitive _____

   affective _____

   recall _____

   application _____

   generalization _____

   analysis _____

   synthesis _____

   evaluation _____

   other _____

---

8. Includes objectives for:

   _____ adaptation of skill

   _____ future skill use

9. Criteria for mastery of objectives stated

_____ in terms of percentage

_____ in terms of rate

---

10. Required learner response mode(s):

_____ wide range of responding

_____ specific response, typically the same mode

_____ appropriate to age level

_____ appropriate to cultural background

_____ develops a variety of skills simultaneously

_____ designed for practical application

_____ other: _____

---

11. Suggestions for learner "match"

_____ cultural

_____ age

_____ pertinent to interests of students

---

12. Includes assessment and placement procedures

_____ identification of prerequisite skills

_____ fine grained assessment

_____ continuous record keeping/charting provision

---

13. Adequate opportunity for drill/practice:

_____ active responding

_____ programmed format

14. Materials are:

_____ durable

_____ reuseable

_____ easily modifiable

---

15. Materials will be a compatible addition to resource materials:

_____ compatible with space, time

_____ compatible with available time for usage

_____ compatible with existing equipment

---

16. Format is appropriate for learners:

_____ style/layout is easy to follow

_____ figure/ground/size of print

_____ vocabulary level is appropriate

---

17. Suggestions for delivery of instruction

_____ group

_____ individual

_____ lecture

_____ discussion

_____ media

_____ peer tutoring/study groups

---

18. Field testing of curriculum:

population sample: age _____ size _____

sex _____ background _____

regional development: _____

achievement gains of sample: _____

18. (continued)

interpretation of field test results: _____

_____

II. Curricula Implementation

1. Specialists demonstrated use of the curriculum?
2. Curriculum implementation suggestions are being followed _____

_____

3. Teachers are modifying the curriculum to meet individual needs _____
4. Lesson plans are adequate _____
5. Which type interactions occur with the curriculum?

_____ teacher-student _____ media student

_____ student-student _____ teacher-teacher

III. Curriculum Outcomes

1. Results better than other curriculum for classes as a group _____
2. Results were better for individual student than under other curricula.

If so, which type of students? _____

_____

3. Extent to which the curriculum results could not be attributed to sources outside the curriculum itself. (explain)

_____

_____

Appendix 3

1: HISTORY OF CURRICULUM THOUGHT AND PRACTICE

ARNO A. BELLACK*
Teachers College, Columbia University

Curriculum innovators of the past decade have attempted to solve the difficult problems of curriculum planning and development with scant attention to the historical dimensions of these problems. The Committee on the Role of Education in American History (1965) contended that "imperfect knowledge" of educational history had "affected adversely the planning of curricula . . . in the continuing crisis of American education." Goodlad (1966, p. 91), in his critique of the contemporary curriculum reform movement, deplored the fact that "A substantial number of the new crop of reformers have approached the persistent, recurring problems of curriculum construction in the naive belief that no one had looked at them before."

This ahistorical stance seems to be characteristic not only of the current crop of curriculum reformers, most of whom are university professors of academic disciplines, but also of educationists who claim curriculum building as their field of professional specialization. Kliebard (1968, p. 69) maintained that in the curriculum field "issues seem to arise *ex nihilo;* each generation is left to discover anew the persistent and perplexing problems that characterize the field." He contended that the inability of curriculum specialists to see their field in perspective resulted in a "tendency to repeat the rallying cries and slogans that had their origins in a different intellectual climate and a different social milieu as if they had an immediacy that they no longer possess" (Kliebard, 1968, p. 69). He concluded that if curriculum is to prosper as a field of study, critical examination of inherited ways of thinking about curriculum problems is essential. He urged curriculum theorists and practitioners to engage in dialogue not only among themselves, but also with their professional forebears.

There is evidence of dawning interest on the part of at least some historians and curriculum specialists in participating in such a dialogue. For example, Cremin (1966), an historian, viewed the current curriculum reform movement as "essentially continuous with the efforts of the early progressives." He contended that the ultimate aim of both reform efforts

*Dr. Maurice Johnson, State University of New York at Albany, served as the consultant to Dr. Bellack on the preparation of this chapter.

is the same: "to humanize knowledge so that it can be popularized." And Goodlad (1968), a curriculum specialist, examined the "excesses" both of the progressive reformers of the 1930's and 1940's and of the discipline-centered innovators of the 1950's and 1960's; he made proposals for the future which would integrate the achievements of the progressive and discipline-centered eras.

Interest in the contributions that history might make to the study of curriculum is beginning to develop not only in the United States, but in England as well. Charlton (1968), a British historian, discussed the relevance of the historian's methods (basic concepts and modes of investigation) to curriculum theorizing; he explored the question of the extent to which the content of history can be drawn on in dealing with problems of curriculum planning, not to provide answers or solutions to problems, but "to make us aware of the possibility of change, of the complexity of change, and of the carryover of the past into our present situation and future aspirations" (p. 77).

Formative Years of the Curriculum Field

For centuries educational philosophers and theorists have given serious attention to basic curriculum questions (what to teach, how to teach, and how to improve teaching), but the self-conscious identification of certain educational theorists and practitioners as curriculum specialists is a development of twentieth-century American education. The emergence of curriculum as a field of professional work and study was explored by Seguel (1966), Caswell (1966), and Kliebard (1968a).

Seguel examined certain aspects of developing thought about curriculum problems from the 1890's to the late 1930's that contributed to the establishment of curriculum as a specialized field of study. The views of seven influential men, *viz.*, Charles McMurry, Frank McMurry, John Dewey, Franklin Bobbitt, W. W. Charters, Harold Rugg, and Hollis Caswell, were examined to cast light on the outlines of emerging thought that eventually led to the awareness by the educational profession of the nature and importance of curriculum making. The writings of these key figures were analyzed to discover how each one perceived the educational situation, and why he became interested and involved in the study of curriculum; what proposals he made about the curriculum; and how relevant to educational practice his proposals proved to be. Seguel concluded that the period under study could be characterized by four persistent interests on the part of the emerging group of curriculum specialists: 1) the nature of knowledge, 2) the nature of the knowing process, 3) the professional status of the new specialty of curriculum making, and 4) procedures for introducing new curriculum insights into educational practice on a broad scale.

Caswell (1966) presented an account of the "organized curriculum movement" as it took form during the 1920's and 1930's. Since that time, the persistence of certain educational problems that "are studied systematically only by general curriculum workers" has, according to Caswell's interpretation, made the curriculum a field of established professional importance. He identified three continuing, central concerns of curriculum specialists: 1) assuring sound sequence or continuity in the curriculum, 2) establishing consistent relationships between general goals of education and specific objectives that guide teaching, and 3) designing curricula that provide a reasonable balance of emphasis among the various areas of study.

Kliebard (1968a) also saw the 1920's as the decade in which curriculum emerged as a field of professional activity. He explored the intellectual climate and prevailing modes of thought of the age in which Bobbitt achieved prominence as the foremost practitioner in the curriculum field. The predominant social doctrine espoused was "social efficiency," which in curriculum terms "held up all school subjects, indeed all school activity, against the criterion of social utility" (Kliebard, p. 75). The key idea was that subjects taught in the schools were to be judged by criteria external to the subjects themselves. In addition to the criterion of social utility applied to school studies, Kliebard pointed out that the social efficiency movement incorporated two closely related dichotomies that were to have a profound effect on twentieth-century curriculum development: 1) the dichotomy of school subject—the academic and the practical, and 2) the dichotomy of school population—college preparatory and non-college preparatory.

Critical studies that trace the development of the curriculum field beyond its formative years are much needed. Of special importance would be investigations of the 1940's, when the war caused severe dislocations in the schools, and the 1950's, in which a new breed of reformers led a vigorous reform and wrested leadership from the curriculum specialists who traced their professional lineage to Bobbitt and Charters. Such inquiries should focus attention not only on the development of curriculum proposals and doctrines championed by individuals and organizations, but also on the impact of these proposals on actual educational practices.

Curriculum Theorists

In an essay on the historiography of American education, Cremin (1965, p. 79) contended that "one of the great lacks to date has been a sufficient number of detailed, critical studies of individual educators." To a limited degree, this need is being met by a number of studies of educators who influenced the development of curriculum thought and practice.

Wirth (1966) critically appraised one period in John Dewey's career

when he had direct and continuing responsibility for the development of an educational program. This was the decade 1894-1904 when Dewey was chairman of the combined Departments of Philosophy, Psychology, and Education and founder-director of the University Laboratory School at the University of Chicago. Wirth examined the influence of Dewey's general philosophical theory on the curriculum and methodology developed in the Laboratory School. Dewey's "Plan of Organization of the University Primary School," prepared shortly before the Laboratory School opened, appeared in print for the first time in an appendix of Wirth's study.

A collection of lectures given by John Dewey on the Philosophy of Education at the University of Chicago in 1899 was edited by Archambault (1966). These lectures constituted, in the editor's words, "the pilot study for the *Democracy and Education* of 1916." They were concerned not only with criticism of educational practice and rebuttals of the views of Herbartianism, the reigning doctrine of the time, but also with Dewey's own emerging views on curriculum and teaching methods. Archambault detected a "striking consistency" between the educational theory set forth by Dewey in these lectures and the clarification of his mature position in *Experience and Education* in 1938.

Drost (1967a) presented a professional biography of David Snedden, spokesman in the early decades of the twentieth century for "the most thoroughgoing form of social efficiency." In many respects, Snedden's curriculum proposals anticipated the life adjustment ideology of the mid-1940's and the early 1950's. Drost argued that although Snedden's popularity began to decline in the late 1920's, many of the views he advanced were adopted by others and have continued to the present time to be important alternatives in educational planning, particularly in certain contemporary proposals for disadvantaged students.

Harold Rugg's efforts to reform the teaching of the social studies were investigated by Winters (1967). He dealt primarily with the writing and publication of the unified social science textbook series which Rugg chose as the vehicle to carry his ideas into American classrooms. Rugg's curriculum was based on "great central concepts" related to the crucial problems of social life that had been identified by the "frontier thinkers" in the social sciences.

Eisner (1967a) analyzed Bobbitt's efforts in the 1920's to demonstrate how scientific principles might be applied to the practical problem of curriculum construction. He described the educational context in which Bobbitt worked—an environment in which the ideas of social efficiency, scientific management, experimentalist theory, and psychological measurement were widely proclaimed. Eisner examined the consequences that followed from Bobbitt's approach to curriculum building and explored the reasons why Bobbitt's work had little impact on the progressives, the essentialists, and rational humanists. Eisner identified certain "family

resemblances" between the views of Bobbitt and certain contemporary curriculum theorists including Ralph Tyler, Benjamin Bloom, Virgil Herrick and John Goodlad.

A cogent reappraisal of James B. Conant's role in recent educational history was presented by McClellan (1968). He traced the development of Conant's views on public education, including his views on curriculum issues, from the 1930's to the present. Using the tools of contemporary philosophical analysis, McClellan examined the arguments that Conant presented for his curriculum proposals and concluded that "Conant has not provided and could not provide rationally compelling arguments for educational policy."

National Curriculum Commissions

Since the latter part of the nineteenth century, curriculum making by national committees has been a distinctive feature of American education. Historical investigations of these commissions--the educational and cultural milieu in which they worked, the nature of their policy proposals, and their influence on classroom teaching—are essential to understanding the development of curriculum thought and practice.

The reports of the Committee of Ten in 189[illegible] and of the Commission on the Reorganization of Secondary Education in 1918 were landmarks in the development of the high-school curriculum. Sizer (1964) presented an appraisal of the report of the Committee of Ten—its setting, its composition, its distribution, and its effects. Sizer viewed the report of the Committee as "the first such effective document in the history of American education." The Committee, whose specific function was to bring about reforms in the instructional program, "standardized the main-line subjects in the secondary school curriculum." Sizer contended that after initial success in influencing the development of high-school education, the report became obsolete in two decades, due largely to a rapidly expanding school population and far-reaching social and cultural changes in the nation. Krug (1964) reappraised both the role of the Committee of Ten and the influence of the Commission on the reorganization of Secondary Education in the shaping of the American high school. Krug's volume is indispensable reading for an understanding of how the American high school came to be the institution it is.

There was hope in some quarters that the report of the Committee of Fifteen in 1895 which dealt with elementary education would do for the elementary schools what the Committee of Ten had done for the high schools. This turned out to be an idle hope, as Button (1965) indicated in his assessment of the Committee of Fifteen. Button explored the reasons why the doctrines of the Committee of Fifteen were rejected for other views more acceptable to influential reformers of the time. Drost (1967b) presented an account of the "great debate" occasioned by the presentation

of the report of the Committee of Fifteen. He expressed the view that the controversy at the heart of the debate was "the issue of content selected for specific purpose versus the integrity of the subject fields" and suggested that this issue has turned out to be a continuing dilemma for curriculum makers.

National curriculum commissions exercise no less influence in the contemporary reform movement than they did in earlier periods. Under varied auspices, including national professional organizations of the academic disciplines, national commissions have been at work during the past decade designing curricula to revitalize the teaching of many of the subjects in the school program. A number of these commissions have been at work long enough to permit critical examination of their activities in an historical perspective.

Wooton (1965) presented an account of activities of the School Mathematics Study Group from its initiation in 1958. He analyzed the various projects of SMSG and explored the reasons why the crucial decision was made to concentrate initially on the writing of sample textbooks. DeMott (1964) investigated the skirmishes during the period of 1961-1964 in the "math wars" between the opponents and proponents of the new mathematics.

Glass (1964) traced the curriculum improvement activities of the Biological Sciences Curriculum Study during the years 1959-1964; he concluded that during its first five years the BSCS program incorporated two distinctive features that previous efforts to improve the science program had failed to stress: first, large numbers of research scientists collaborated with high school teachers in replacing antiquated content with contemporary scientific knowledge. and second, the new curriculum stressed the understanding of the nature of scientific inquiry rather than the acquisition of scientific information.

Critical historical studies of the activities and policy proposals of the numerous national curriculum commissions that have been at work during the past decade are definitely needed. Many of these commissions have introduced into the mainstream of educational thought proposals that have profoundly influenced the course of curriculum development in the schools, and there is no understanding the present state of affairs apart from their contributions.

Curriculum Problems and Issues

To say that the contemporary curriculum problems have historical roots is to be guilty of a commonplace. But given the pervasive ahistorical posture of the curriculum field, it is a truism that curriculum specialists would do well to keep in mind. In this section a limited number of studies that help place certain current issues in historical perspective are reviewed.

The present era of curriculum development is marked by widespread interest in programed instruction. Dale (1967) reviewed certain past developments in curriculum and teaching that provide an historical context for some of the persistent problems that have to be dealt with in introducing innovations like programed instruction into the school program. He described innovations championed by reformers in the past that included certain principles and characteristics now combined in programed instruction: activity analysis and specification of behavioral objectives; criterion tests of terminal behavior; feedback on the results of learning efforts and instructional designs; individualized instruction: and educational engineering. Dale's analysis revealed the continuing influence on contemporary developments in programed instruction of early leaders in curriculum building like Bobbitt and Charters, who stressed activity analysis and detailed specification of objectives in behavioral terms.

Questions about the role of objectives in instructional planning are persistent concerns for curriculum specialists. Eisner (1967b) and Kliebard (1968b) traced the interest of curriculum makers in stating objectives in behavioral terms to the work of Bobbitt in the 1920's, and both argued that the doctrine of behavioral objectives has serious limitations.

Eisner examined Bobbitt's viewpoint on the central importance of specific behavioral objectives in instructional planning and showed that the influence of Bobbitt's views extends to the present in the work of certain curriculum theorists such as Ralph Tyler, Benjamin Bloom and David Krathwohl. Eisner contended that the theory of behavioral objectives has serious limitations because it has "not sufficiently emphasized the extent to which the prediction of educational outcomes cannot be made with accuracy"; and it has not adequately taken into account "the ways in which the subject matter affects precision in stating educational objectives." Eisner's essay was followed by critical comments by three specialists in the fields of curriculum and testing (Ebel, 1967; Hastings, 1967; Payne, 1967); this intriguing interchange of views closed with a response by Eisner.

Kliebard (1968b) explored the social and educational context in which the "ideology" of behavioral objectives emerged in the 1920's with the work of Bobbitt and traced the influence of this viewpoint through the intervening years to contemporary curriculum theories of Ralph Tyler and Will French. Kliebard (p. 246) suggested several points at which he considered the notion of behavioral objectives to be most vulnerable, the most serious of which was that "from a moral point of view, the emphasis on behavioral goals . . . still borders on brainwashing or at least indoctrination rather than education."

The views of Eisner and Kliebard regarding the value of defining objectives in behavioral terms differ markedly from those expressed by Dale (1967). Although the issues at stake in the dispute obviously cannot

be settled by historical analysis, such analysis does provide useful background and perspective for consideration of the questions under debate.

During the 1960's, the empirical study of the teaching process has become a major interest of educational researchers. Broudy and Palmer (1965) and Lee (1966) provided an historical setting for current concerns with teaching. Broudy and Palmer concentrated on teaching method as it was exhibited in the work of a selected number of noted teachers from ancient times to the recent past, including Socrates, Abelard, Comenius, Pestalozzi, Froebel, Herbart, and Kilpatrick. The authors were primarily concerned with conveying something of the teaching style of these "exemplars" and how their teaching reflected or exemplified the pedagogical problems of their age. The basic thesis of their volume was that "it is the success routes of an era that dictate the dominant patterns of schooling and the styles of teaching."

Lee analyzed the ways in which the role of the American teacher and common perceptions of that role have changed in recent years. He focused upon teaching and teachers in the period since the outbreak of World War II and attempted to compare conceptions of the late 1930's and the 1940's with those of the mid-1960's. He concluded that "we have been moving since the war toward a more modest and manageable conception of the teacher's function."

Contemporary theories of curriculum and teaching method have been influenced by many diverse conceptions from the past, including "the project method" which enjoyed great vogue during the heyday of progressivism. Bleeke (1968) reviewed the development of the project method from its early beginnings in agricultural programs to its later identification with the activity curriculum. Major attention was given to key figures such as W. H. Kilpatrick and J. F. Hosic.

Today it is generally agreed that if programs of curriculum development are to influence classroom behavior, provision must be made for the active participation of teachers. Peltier (1967) raised the question, "How did the classroom teacher first acquire responsibility for planning the curriculum?" He chose the Denver Public Schools for an historical case study of teacher participation in curriculum revision. The period studied was the 1920's, when the Denver approach to curriculum making stressed not only the involvement of teachers, but also the use of curriculum specialists and the establishment of a permanent curriculum department.

A persistent need in any field of study is precision in meaning of its basic terminology. In curriculum literature few terms have been so inadequately defined as the term "experience curriculum." Phillips (1965) attempted to clarify the meanings of the term by examining its historical development since the 1930's as revealed in the writings of prominent exponents of the experience curriculum.

Afterword

The historical investigations reviewed in this brief chapter are evidence of interest on the part of at least some contemporary historians and curriculum specialists in studying the history of curriculum thought and practice. Those who pursue historical studies in this area would do well to keep certain guiding ideas in mind. First, historical inquiry should not be viewed as a search in the past for solutions to present-day instructional problems. As was suggested earlier in this chapter, the purpose should be to help make us aware of the possibility and complexity of curriculum change and conscious of the carryover of past doctrines and practices into the present situation. Second, the historian would do well to avoid what has been called "the sin of evangelism" (Cremin, 1965)—attempting to inspire teachers with professional zeal, rather than helping them understand what actually happened in the development of curricula in the schools. Third, it should be borne in mind that the history of curriculum thought and practice cannot be separated from the general history of American education, which, in turn, cannot be divorced from the broader stream of cultural and intellectual history.

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AUTHOR

ARNO A. BELLACK *Address*: Teachers College, Columbia University at New York, New York *Title*: Professor of Education *Age*: 35 *Degrees*: B.S., Univ. of Wis.; M.A., Univ. of Wis.; Ed.D., Teachers College, Columbia Univ. *Specialization*: Research on Teaching and Curriculum.

LAURENCE J. COLEMAN

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Using Readability Data for Adapting Curriculum Materials

Abstract: The paper describes how to use readability information as a basis for adapting materials. The rationale for making specific decisions is discussed. A practical outline of the process of adapting materials is offered.

A teacher of mentally retarded children is required to make decisions about children directly under his/her instructional control and to advise regular educators on how to manage instruction for children who are placed in "regular" classrooms. The special education teacher is responsible for addressing the obvious problem of how to help the children who can not understand the existent instructional materials and how to help teachers who have mainstreamed children.

Special education teachers can use a number of techniques to analyze instructional materials. Coleman (1977) has described seven techniques for determining the comprehensibility of instructional materials and made several recommendations for their use. Those techniques do not show the teacher specifically how to modify those same materials nor do they guarantee a child will be able to understand the material.

The purpose of this paper is to describe readability techniques for adopting instruction materials. A series of steps will be outlined which are appropriate for use with general reading materials as well as in specific subject areas. The rationale for specific decisions about vocabulary and sentence structure complexity will also be provided.

Basic Considerations

Readability estimates are based upon an examination of vocabulary and sentence complexity. These variables are at the center of any attempt to adapt materials. The actual adoption of any written material requires that decisions be made about vocabulary and sentence complexity in terms of the abilities of learners and in the terms of the content of the materials to be modified.

An Assumption

Adapting curriculum materials is a process that requires a series of decisions to be made. These decisions are predicated upon an assumption about curriculum materials centering on the question, "What are students supposed to learn from the instructional materials?" This question assumes that there is more than one idea or concept in any specific reading and that the concepts within the specific reading can be organized on a continuum from most central to an understanding of the materials to least central. All written material can be analyzed in terms of those assumptions. This point is crucial, for, as children advance toward and into secondary school, content becomes increasingly important. The content of materials seems to acquire intrinsic value to teachers, particularly non-special education teachers. Adaption of materials frequently requires that some ideas be de-emphasized and even deleted. Neither operation provides a straightforward solution. If the modified material must be a complete, isomorphic reproduction of the original material, it is not possible to adapt the materials for mentally retarded learners. This unfortunate situation happens because the inability to prioritize the ideas within the materials makes it impossible to change the vocabulary

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demands placed on students who need to read the material. Thus, the material cannot be modified relative to individual differences.

Other decisions which need to be made are related to a child's or class's instructional level and the readability of the material. When a child is at an instruction level, it means the child can read materials which have a specific vocabulary and sentence structure. When material is at a specific readability level, it means the vocabulary and sentence complexity are controlled in a special way. Adapting material is making decisions which coordinate these two independently derived, yet interrelated, measures. Consequently adapting materials requires decisions about sentence complexity and vocabulary.

Sentence Complexity

Decisions about sentence complexity are really choices made about the structure of sentences, and, eventually, of paragraphs. Decisions need to be made about the sentence length, the order of information, and the use of clauses with various connectives. Each point is discussed in detail below.

The first decisions have to do with sentence length. This is a key decision because as sentences sometimes become longer they tend to become more complex. This simple observation is obvious from examining the William's Table for the Dale-Chall Readability formula (Williams, 1972) or the Safier Table for the Spache formula (Safier, 1959). By consulting these tables one can see that by holding the number of words a student knows as constant, it is possible to increase or decrease the reading level of a passage by changing the length of the sentence. For example, in the Safier Table, the readability of a hundred word passage with five unknown words increases from approximately second-grade level to fourth-grade level by simply lengthening the average sentence from five words to nineteen words. Similarly, decreased reading level can be accomplished by shortening a sentence.

Of course, you cannot keep increasing the length of a sentence unless you begin to introduce dependent clauses, conjunctions, etc. This fact illustrates why sentence length is such an important decision. However, sentence length alone cannot guarantee understandability.

A second decision concerns the *order of information* within a sentence or within a paragraph. Information is easier to understand when the subject is followed by the verb and object. A series of sentences, or a paragraph, written this way is more understandable because the associated meanings follow a predictable sequence. This predictable sequence can take different forms. Analysis of beginning reading materials and experience with adapting materials for special needs and foreign language students suggests that the following sequence is judged most understandable: a person (or thing) acts in some way towards a person (or something).

The importance of predictable sequences can be seen from the readability research which employs the cloze procedure (Taylor, 1953) since the procedure itself is based on the notion of predictability in written communication. Some indication of the place of predictable sentence patterns can be found in research on the problems mentally retarded learners have (Thibodeau, 1974). Given the difficulties many learners experience with abstract ideas and complicated directions, decisions about sequence are necessary when adapting materials.

A third decision has to do with the use of *clauses* in sentences. Clauses are groups of words in sentences that are tied to the sentence by a connective. These clauses are either subordinate or coordinate to a sentence. Clauses are used to clarify ideas. Their use permits us to consider several ideas, sometimes contradictory ideas, at the same time. Since we are educated adults and, in Piagetian terms, at the formal operations stage, we can deal with written language which is abstract, contradictory, and demands consideration of several variables at the same time. The same language is largely incomprehensible or confusing to children when it is written. Several lines of evidence support this assertion.

Robertson (1968) conducted a study in which sentences containing clauses beginning with words like *however*, *thus*, *which*, *although*, and *yet* interfered with the comprehension of children in grades 4–6. Stoodt (1972) with a fourth grade sample has shown how words such as *when*, *so*, *but*, *or*, *where*, *how*, *that*, and *if* interfere with comprehension. Note how most of these words seem to require readers to consider two ideas at the same time. A recent study by Antonak and Roberge (1978) indicates that conditional reasoning is apparently delayed in educable mentally retarded children from intermediate level to senior high school. This type of reasoning uses "if, then" types of clauses.

The words which have been described in these studies serve as connectives between ideas. Their comprehensibility seems to be related to age considerations such that difficulties with these words or clauses diminish as children get older. Since mildly retarded students may be conceptualized as developmentally delayed, this evidence suggests that they will experience difficulty with these words over a longer period of time. Difficulty in this sense refers to comprehending the meaning of sentences in which the words are used rather than recognizing or recalling the word.

Given these data, when adapting materials, it is best to avoid sentences using these words as much as possible. In the writer's experience most teachers have great difficulty constructing sentences without these connecting words, especially "if, then" sentences. It is a habit which is often difficult to break. When it is impossible to use other words, keep the sentences as short as possible. The choice of a more comprehensive word, such as *and*, for connecting ideas may serve just as well to convey intended meaning.

Vocabulary

Vocabulary is the second consideration when modifying materials. Vocabulary refers to the words a child can recognize. The actual reading vocabulary of a child can be determined only by comparing the child's knowledge to a standard group of words. The standard group of words may come from different sources. One source is the word list found in readability formulas and the second is the subject-specific or material-specific list. This latter is usually available at the back of the book, in the teacher's manual, or from the publishers.

In order to find out what words the child knows, ask the child to read the list. These known words form the basis for your modifications and for forming instructional groups. Obviously, this is a time-consuming process. The only consolation for teachers is that when it is done, it does not have to be done again. The unknown words will have to be taught to the students.

A discussion of vocabulary is not complete without mention of a troublesome vocabulary problem. There is a tendency when adapting materials to try to use familiar words in unfamiliar ways. As teachers, we assume these familiar words will be readily understood by children. This is a gratuitous assumption and leads to confusion for teachers and students. The teacher thinks the student knows the word and the student does not believe he knows it because it is in an unfamilar context.

Several examples are given to illustrate this problem. The word *light*, for example, may be used in different ways: "The light went on" or "He had a light touch" or "He walked very lightly across the floor" or "Light up the fire." Different meanings for the same word confuses readers. It is advisable to use vocabulary in a similar manner in order to avoid this situation.

A vocabulary problem similar to the one just discussed is the problem of figurative language. Figurative language occurs when the meaning of the phrases and sentences in the material departs from literal use of the vocabulary. Several examples from popular readers serve to illustrate this problem: "The houses grew tall beside it," or "The train squealed and screeched in and out of the station," or "Three men who were standing beside him were blown over by the force of his voice." Each of these sentences describes a situation in a nonliteral way. While the meaning is clear to most adults, it is obscure for children. These departures from literal meaning of the words are difficult for children to understand (Cohen & Kornfield, 1970; Robertson, 1968). The task for special

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education teachers is to examine the instructional materials for figurative language. These structures make the readability of materials more difficult than the estimates given by readability formulas would indicate.

Process of Adapting Materials

Based on considerations just discussed, the procedure for modifying is outlined in this section. These procedures are intended to serve as a generalizable base for adapting many kinds of instructional materials.

Example of Adapted Material

To illustrate differences in language, a sample of approximately 150 words taken from a history textbook (Concept Inquiry, 1971, p. 133) used in mainstreamed settings is included along with an adapted or rewritten version at a lower difficulty level. The original passage is at a 5th–6th grade level, according to data by Williams (1972); the adapted material has a readability of 2.3 grade level (Safier, 1939). Italic words are not on the Spache list.

5th–6th Grade Level

About 4,000 years ago, it seemed that *civilization* was possible only in river *valleys*. Such *valleys* were *flooded* once a year. Men learned to use the *floods* for *irrigation* by digging *canals* or *catchment* basins. *Irrigation* made it possible to *produce surplus* food. With a *surplus* of food, came *division* of *labor* and the *growth* of cities. As men *settled* down, they *developed* new *areas* of *knowledge* and new *forms* of *government*. Each early society which *developed* a civilization went through this *order of change*.

Could civilization develop in other *environments*? We know that men had been growing crops long before they found out about *irrigation*.

2.3 Grade Level

About 4,000 years ago, it seemed that man could live only in river *valleys*. Each year the *valleys* were covered with water when it rained a lot. Man learned to use this water in a new way. They would dig holes in the ground to catch the water. They saved the water. Later, the water helped to grow more food. They had more food than they needed. With more food they could give people different kinds of work. The cities began to grow. Men stopped moving. They stayed in one place for a long time. They made new kinds of *government*. Each of the early people *changed* in this way.

Could man live in other places? We know man had been farming long before they found out about catching and saving water.

Gathering Data

The first step in adapting materials is to find out what the child's abilities are in terms of his reading vocabulary and to determine the readability of the material. The question of readability may be answered by selecting the readability technique (see Coleman, 1977). In our example, the Dale-Chall and the Spache Readability formulas were used.

In order to determine a child's reading and vocabulary ability the teacher should (a) administer a formal, or preferably an informal, reading test to obtain an approximate grade level, and (b) ask the child to read the word list upon which the adaptation is going to be based. In our example, the child is reading on the second grade level. Therefore, the list of words to be used when modifying materials should be near that grade level. The Dale list of 769 words is the perfect answer because these words are approximately on the third grade level and because these words are the standard list of words used in calculating the Spache readability formula.

When a child reads the 769 words aloud, the teacher quickly gets a measure of the words the child knows and does not know. With this very important information the teacher may better control the presentation of new or unknown vocabulary as well as better anticipate which children will have problems, and can then plan accordingly.

The second part of gathering data is to assess the content of the passage. Since comprehension is central to all efforts behind modifications of materials, the model of comprehension skills is a good starting point for an analysis. Harris and Sipay (1975) have suggested that reading for main ideas and reading to recall details are important comprehension skills. Those twin notions are part of the procedures described below. These steps are not the only way to move but experience has shown them to be most generalizable.

1. Read the complete section. Be clear about what the objectives are for reading the materials before beginning.

2. Reread and make an outline of the main idea in each paragraph. On a piece of paper make two columns. In the left column place these ideas.

3. Reread and note important details. Place these in the right column opposite the relevant main idea. Try to prioritize these ideas as "most necessary" to "least necessary." This last suggestion frequently helps solve problems when selecting vocabulary.

4. Rewrite the outline. Keep only what it is your intention to retain, or place an asterick beside those items.

At this point, or earlier, it is wise to involve the regular education teacher, follow the same procedure, or to evaluate your outline. The preferred method is to have two completed outlines and compare them. When both parties are committed to helping the child learn, it is possible to get agreement. After several times, the process goes much faster. When this step is finished one should have a clear idea of what the material is supposed to teach. This stage is important because it prepares the teacher for the next stage and the most difficult decisions. In the example of adapted material, a content analysis, as outlined, is not possible because the selection is too short. However, the passage does seem to be emphasizing the importance of water to the development of some groups. In the selection of vocabulary the choices implicit in the statement become obvious.

Selecting the Vocabulary

Selecting the vocabulary is most hazardous because it involves specifying the words with which the rewriting will be done. Here is where the subject-specific words must be selected. These words are usually unknown to the child. However, as the child becomes familiar with the subject matter, they do become known words.

In the example of text material, the original passage had 25 words, not counting repetitions, that were unknown (italicized), representing almost 25% of the words. In the adapted version there are only three unknown words. The process of arriving at this point is described below.

The aim of coordinating unknown vocabulary and content analysis is to get a fit or match between demands and the child's ability. Vocabulary selection involves four separate steps:

1. Pick out all the key words in the content outline. They are usually words related to the main idea. These are the words that must be kept there. Try to keep the list as small as possible. It is probable that there would be more words than your students can possibly absorb at one time. Decisions have to be made to reduce this number of words.

2. Decide which details or key words that were once considered indispensible will have to be de-emphasized or deleted. To solve this problem there are several things that may be done.

   (a) Try to delete any words that are likely to be mentioned only once in the course of the study. There is little point in wasting the child's energy on learning to read a word that will not help him read something later on in the course. Remember the words taught now should be added to the list of known words.

   (b) Another method is to try to define the key vocabulary in words that the child can already read.

   (c) Another trick is to try to get a picture in one's mind of the idea to be taught or conveyed to the student. This tends to simplify one's thinking.

   (d) The final hint on reducing the key words is to purchase a book by Ogden entitled *The General Basic English Dictionary*. It contains definitions of 40,000 words using essentially 850 words. It is a valuable aid when one gets stuck and can't think of alternate ways to say something.

3. Consider the unknown words in the context of the complete passage. In this step the teacher is moving beyond the single word. Instead the teacher is considering units of meaning or ideas. The failure to move beyond individual words to ideas usually prevents successful adaptions.

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4. Compare the key list to the list of known words. Decide how many lessons it will take to get the information presented to the students. Divide the key words into an approximate number of lessons. You should expect to have more key words in introductory lessons than in later lessons. Teachers are advised to keep the number of new words to five or less for each lesson.

After these steps have been completed, the vocabulary list needed to rewrite the material is ready. One reminder is that the teacher may have to make additional modifications in the vocabulary as the rewriting continues.

Rewriting the Material

The actual rewriting of the materials tends to proceed surprisingly well once earlier decisions have been made. This case is unlikely if one has decided to begin adapting earlier in the process.

Rewriting requires that some of the considerations about sentence construction discussed earlier be kept in mind. It is suggested that sentence length be maintained as consistently as possible. By consulting the Williams or Safier tables and assuming five unknown words one can arrive at a probable figure. In our example students were assumed to be reading on the second grade level. Therefore the chart indicates sentences of under 10 words in length be constructed. In our example the adaption averages about 8 words. Be careful to minimize connecting words and clauses that tend to decrease the comprehensibility of passages. The rationale for such considerations was presented earlier.

Several other tips are offered here. These tips do not apply to our example. Try not to have sentences run on to another page. Consider breaking sentences between phrases when they need to be on several lines. Finally, try to repeat the vocabulary words as frequently as possible to facilitate learning. The newly learned words become known words to your students and can be used in subsequent adaptions.

Arranging for Direct Instruction

The last consideration in adapting instructional materials is getting ready to teach the material. The procedure is similar to introducing any lesson. It requires that prereading activities be specified and that provisions for review be made. The prereading activities are relatively easy to individualize because the process of adaption has made the teacher aware of which students will have difficulty with specific portions of the material. Further arrangements for instruction will depend upon the subject, the class, and the teacher's style.

Conclusion

This paper has presented a rationale and procedure for adapting instructional materials. This procedure is useful in resource as well as in self-contained settings. There is no way to deny that this is a time-consuming process, but it works best when several teachers do it together. This "team" approach provides support for tedium. It also helps fight off the "Why-should-I-be-breaking-my-back-when-others-are-not-doing-it" syndrome. The reward from this effort comes from students' success and from the sudden realization that once material has been adapted, further modifications are minor. Thus, for the next group of students the most time-consuming feature is largely removed.

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Laurence J. Coleman is *Associate Professor, Department of Special Education and Rehabilitation, University of Tennessee, Knoxville.*

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E. DALE DAVIS

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Teaching the Slow Learner in the Secondary School

Until the 1900s, secondary schools, especially high schools, were selective institutions. Slow learners were often failed, and most dropped out before graduation. Today a high percentage of all American teenagers, of whom from 20 to 25 percent are slow learners, are in school. These students are not freaks, and professional teachers do not look upon them as individuals who are merely serving time until they are old enough to be pushed out into society. Educational literature has much to say by way of theory associated with the identification and characteristics of slow learners, but the literature contains only a few practical suggestions for teaching such students in a secondary school.

Characteristics of Slow Learners

During the spring and summer of 1979, this author and three graduate students interviewed sixty-eight secondary school teachers with master's degrees who had taught four or more years in either a middle, junior high, or senior high school. In the course of the interviews the teachers were asked to *write* the answers to several questions. One question asked them to describe a typical slow learner with whom they had worked or are now working. The characteristics most often listed were analyzed and are stated below:

1. The student's vocabulary is more limited than the average student's.

E. Dale Davis is professor and chairman, Department of Education, Southern Methodist University, Dallas, Texas.

2. The student is weak or slow in making associations between words and ideas.
3. It is hard for the student to make relative generalizations, but it is easy for him or her to grasp the wrong generalization.
4. The student has less creative ability and limited powers of self-direction.
5. The student has less ability to plan and work on his or her own.
6. The student has more interest in the practical and concrete and little interest in the abstract.
7. The student is often slow in motor skills.
8. The student's thought processes are slow, and it is difficult for him or her to do critical thinking.
9. The student learns in short steps and is usually in need of remedial help in several areas.
10. The student is often satisfied with superficial answers and low achievement levels.
11. Usually, the student has a history of unhappy school experiences.
12. The student's real interests are usually outside of school.
13. The student forgets quickly and more completely than the average student.
14. The student is very susceptible to the suggestions of others.

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Teaching Slow Learners

Another question asked of the sixty-eight teachers interviewed was: "What are the most helpful methods or procedures you have found in your work with slow learners?" The approaches listed below are the ones which were most often stated by these experienced teachers:

1. Do not just "cover subject matter." Be patient and set a reasonable pace.
2. Accept them as "human beings" who are your students (in most cases, the teachers used words such as "accept them as your students") and give them personal attention and explicit and precise assignments.
3. Give them supervised study and make sure most of their work is done at school under your supervision.
4. Carefully explain assignments to them and give them more drills, examples, illustrations, and reviews than you normally give to faster learners.
5. Use more audio-visual aids than you would with the average student.
6. Help them with their reading and study skills.

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7. Evaluate their work constantly so that you will know what they are learning or failing to learn.
8. Use a reasonable amount of carefully planned homework, and make sure they know how to do it.
9. Give them much encouragement. Do not deliberately embarrass them, and give them "sensible" praise when it is deserved.
10. Encourage them to ask questions when they do not understand. Let them know you are there to teach them. Be persistent with your efforts, and show them you expect them also to be persistent in their efforts to learn.

Adaptations of Regular Methods

From a study of educational literature and from a careful analysis of the responses of the teachers in this study, there appears to be general agreement that slow learners, like all students, learn most effectively when they become active participants in the learning situation. Yet it is obvious that this can occur only if methods and materials used are within the student's comprehension. Educators know that all youth cannot profit from an identical education. In order that maximum benefits may be received, education must be adapted to individual differences and needs. Thus a third question was asked of the sixty-eight teachers: "What are some adaptations of regular teaching methods which you think teachers can make to teach slow learners more effectively?" The following statements are the summarized responses:

1. Use firsthand experiences which are within the ability of the slow learner and will help the student get meaning out of reading and oral lessons. Use field trips or audio-visuals to help the student grasp materials and concepts. Use resource people from related fields. Use many demonstrations to show how processes are done or how things operate. Provide many opportunities for drill and practice, using a variety of approaches. Try to make such sessions interesting.
2. Set short range and immediate goals which are tangible to the slow learner. Try to get the student to experience some success as often as possible. Success builds success. A beaten down slow learner may give up and become indifferent or boisterous and rowdy. Give the student specific reasons for thinking well of himself by giving him work that he can do, then praising him when it is completed. Help the student prove that he is worthwhile and can make a contribution by helping him achieve success. Success strengthens one's self-concept.
3. Remember that understanding and cooperation can be facilitated through structure. This is true with most students and is especially needed with the slow learner. Make direc-

tions clear and simple. Have the student repeat the directions back to you in his or her own words, if necessary. The student who knows what is expected is more apt to perform and cooperate.

4. Provide a continuity of experience. Have a logical sequence of learning activities. Each new experience should be seen as part of a planned sequence which relates to a total situation. When the slow learner can see the transition from one step to the next, meaningfulness will be increased. Material which is meaningful is more likely to be remembered. Keep in mind also that frequent drill and review affect the thoroughness of learning.
5. Relate the knowledge, understandings, concepts, and skills to the slow learner's own life when possible. Effective and permanent learning is facilitated when the student can see how the acquisition of subject matter and skills can be used in his or her own life. Often, applications may have to be pointed out to slow learners, who are less likely to make the transfer by themselves.
6. Provide help in analyzing situations and subject matter materials. Often a slow learner may sit and do nothing because of a lack of ability to analyze. The student can be given experiences in analyzing by asking him or her "what needs to be done" in English sentences, spelling, health, science, or civics. The student can be asked to evaluate information. The student can be given experience in distinguishing fact from opinion, discovering fallacies of thinking and evaluating sources of information.
7. Help the slow learner to improve his or her thinking. The student can be trained, within the limits of his or her intelligence, to think better than he or she would otherwise think without training. The student can be taught to think more effectively and to make more accurate and relevant judgments. The student can be taught to discriminate among values.

   Many interviewees felt that teachers need to give slow learners more chances to see several possible solutions to problems or situations so that they can use their minds. The students will be able to see several ways, instead of only one way, of doing things. Since many slow learners come from socially disadvantaged homes, exposing them to several ways of doing things, including the conventional, was recommended by a high percentage of these experienced teachers.
8. Almost half of the sixty-eight persons interviewed recommended that teachers use some adaptation of the so-called discovery or problem solving method. This, they said, would increase the interest and curiosity of the slow learner and also teach the student to do more critical thinking.

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FOCUS ON EXCEPTIONAL CHILDREN

Curriculum Modification as a Strategy for Helping Regular Classroom Behavior-Disordered Students

Linda L. Edwards

The concept of mainstreaming, which in its broadest interpretation refers to the integration of handicapped learners into regular educational programs, has received acceptance from most special educators during the past decade (Keogh & Levitt, 1976). Despite legal, philosophical, and social support for the concept, however, several investigators (Kaufman, Gottlieb, Agard, & Kukic, 1975; Meyen & Moran, 1979) have noted that emphasis to date has been upon administrative arrangements for its facilitation rather than upon instructional or curricular concerns after the initial stage of the process (placement of the handicapped learner within the regular educational environment) has taken place.

In their review of the limitations of mainstreaming, Keogh and Levitt (1976) pointed out that:

> . . . most of the mainstream models provide effective techniques for the placement of the exceptional child in the regular program and identify the kinds of support services needed. Few guarantee, let alone evaluate, what happens to the child once placed . . . Lacking is delineation of possible pupil by program interaction getting at the question of *which* kind of instructional arrangement in the regular program is appropriate for children with *which* kinds of educational characteristics (p. 3).

Several years later, Meyen and Moran (1979) restated this problem from the specific perspective of serving the mildly handicapped mainstreamed pupil. They emphasized that continued effort still has to be given to defining "instructional options that are effective in meeting the needs of students with learning problems" (p. 530). Further, as these options prove to be valid, students in need of them become identified as learning handicapped rather than having identification become the major preoccupation or focus around which program options are later developed.

Dr. Edwards is Assistant Professor, Special Education, at the University of Missouri-Kansas City.

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This article presents a validation of a learning strategy found to be effective in ameliorating some of the educational difficulties of mildly behaviorally disordered students in the regular classroom. The emphasis is on defining an instructional methodology to increase the probability that such learners would be successful — both academically and behaviorally — in this environment.

REVIEW OF PAST STRATEGIES

The literature concerning problems presented by mild and moderate behavior disorders of students in regular classrooms has suggested that these problems traditionally have been approached through a behavior analysis methodology. In general, these studies have been of three types: those focusing upon increasing attention to task as a strategy for improving problematic behavior (or decreasing problematic behavior by improving attention); those examining academic performance in addition to or in relationship to attention to task; and those investigating the manipulation of antecedent events and teaching performance and the resulting effect upon behavior and achievement. Implications of the findings of each of these groups are briefly examined as follows.

Attention to Task

Much of the behavioral literature relative to classroom performance of school age children has been devoted to measuring the effects of reducing problematic behaviors through a direct approach — i.e., "reinforcement for refraining from engaging in disruption" (Ayllon & Roberts, 1974, p. 71). Since it is logical to assume that one must first attend to a task before it can be successfully accomplished, researchers have focused on results of training teachers to modify inappropriate, disruptive behaviors — those that are incompatible with attention to and completion of academic tasks (Hall, Lund, & Jackson, 1968; Thomas, Becker, & Armstrong, 1968).

In other cases, increasing attention to task was the specific focus of the investigation, in the belief that this would produce a concomitant decrease in disruptive behaviors (Walker & Buckley, 1968). Such modification of classroom behavior has been investigated using single subjects (Wasik, Senn, Welch, & Cooper, 1969), entire classrooms (Robertshaw, 1971), and special problem populations (Schmidt & Ulrich, 1969). Strategies for changing disruptive behaviors or increasing attention (use of token economies, group consequences, teacher approval) have also been thoroughly documented (Barrish, Saunders, & Wolf, 1969; Madsen, Becker, & Thomas, 1968).

Results from these numerous studies indicate two clear conclusions. First, teachers can be trained to use behavior modification procedures effectively in their classrooms. Secondly, reduction of disruptive student behaviors results in an increase in attention to task and, conversely, increased attention results in decreased disruptive behaviors.

Attention to Task and Academic Performance

None of the previously mentioned studies was directly concerned with the effects of increasing attention/decreasing disruptiveness upon the academic performance of children. As a result, it was not at all clear whether the reduction of inappropriate behaviors led to improvement in achievement as a function of increased study time (attention to task). In the early 1970s researchers began to challenge the validity of selecting "disruptive behavior" as the major criterion for intervention (Winett & Winkler, 1972). A few studies incorporated a measure of academic performance as a dependent variable and generally concluded that "the relationship between attending behavior and achievement-related behaviors is not clearly understood" (Ferritor, Buckholdt, Hamblin, & Smith, 1972, p. 8).

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In 1974, Ayllon and Roberts suggested that instead of relegating the improvement of students' academic skills as secondary to the "all-out effort to maintain orderliness in the classroom," the reversal of these priorities should be investigated; that is, improved achievement possibly could have the effect of decreasing disruptive behavior. In investigating that hypothesis, they found this indeed to be the case. When systematic token reinforcement was applied solely to the reading performance of five fifth-grade disruptive boys, reading improved considerably and rate of disruptions fell as well. Three studies concerned with the relationships between classroom behavior and academic achievement (Ayllon & Roberts, 1974; Ferritor et al., 1972; Robertshaw, 1971) indicated that performance could be increased if appropriately consequated. A precise relationship between attention and performance remained unestablished, however.

Antecedent Events and Teaching Performance

All students whose various behaviors were measured in the previously cited investigations received standard, traditional curricula administered through traditional teaching methods, regardless of possible differing ability levels and interests. No studies could be found that incorporated change in this stimulus dimension along with measurement of its effect upon the possible relationship of achievement and attention to task, despite strong indications that behavior problems increase as age appropriate achievement levels decline (Camp & Zimet, 1975; Graubard, 1971). Several studies, however, have been concerned with alternate ways of presenting curricular tasks or changes in teaching method and the effects of these changes upon the academic performance of behavior problem students in both regular and special classrooms (Gallagher, 1972; Harris, 1972; Lovitt & Curtiss, 1968).

Representative of studies in this latter group is one by Harris (1972), investigating the effects of restructuring teaching procedures for daily spelling lessons of fifth grade pupils who exhibited inappropriate social behaviors in the regular classroom. Subjects were randomly assigned to an experimental or a control group. The experimental subjects were recipients of a teaching procedure that had established daily goals and immediate feedback concerning performance. Students in the control group received a traditional spelling teaching procedure administered to them along with the rest of the class. Correct spelling response rate approximately doubled for the experimental group, while control subjects either maintained constant rates or increased or decreased performance slightly. The effect of the experimental group's dramatic improvement in spelling achievement upon their classroom behavior was not measured.

Each of the cited studies demonstrated that gain in academic achievement through manipulation of the task dimension and/or teaching procedures can be achieved for such children. None investigated the effects of such gains on overt behavior, with the exception of Gallagher (1972), who found that attentional behavior was better in a highly structured, one-to-one (atypical) learning environment.

Since no study examined all of the above elements (relationships between and among attention to task, deviant classroom behaviors, academic achievement, and teaching procedures/task dimensions), and since each factor individually appears to have a bearing upon the successful educational functioning of behavior disordered students, one might profit by attempting to identify the most effective and efficient mix. Some combination of elements possibly could have a synergistic effect. Which factors pertaining to change in the curriculum/teaching procedure dimension and reinforcement of behaviors will lead to optimal academic success and behavioral adjustment for behavior disordered students in the regular class environment? With the perceived and legislated need for establishing individualized education programs for exceptional children of all degrees of handicap (whether these are carried out in a special or regular class environment) comes the research priority of developing and evaluating individualized or specialized approaches.

A STRATEGY FOR INTERVENTION

Recent trends in special education suggest that children who have mild to moderate behavior problems, and who may in addition be underachievers, will be served primarily in the regular classroom, working along with their "normal" peers under the guidance of the regular classroom teacher, rather than being placed in a special classroom. As a cautionary note to this apparent impetus toward mainstreaming practices, some special educators have proposed that past methods which have proved to be effective with handicapped children in special classes *not* be discarded (Adamson & Van Etten, 1972), but also that researchers additionally give attention to which kinds of educational strategies in the regular instructional program are appropriate for which kinds

of problems exhibited by mainstreamed exceptional children.

Among the theories about educating behavior disordered children in the special classroom is one postulating that "achievement precede: adjustment" (Phillips, Wiener, & Haring, 1960; Whelan & Haring, 1966). Several studies have investigated this hypothesis, using students from special class populations, with results that have usually been supportive of the intervention emanating from this theory — called the structured approach (Haring & Phillips, 1962; Gallagher, 1972). The strategies employed in this intervention, however, had not been applied or adapted to less severely handicapped children being educated in regular class environments.

The present investigation has as its major purpose to identify and describe an effective learning strategy for use in the regular classroom which would ameliorate some of the educational difficulties of conduct disordered, underachieving, mainstreamed elementary students. If it can be assumed or accepted that achievement precedes adjustment, it is reasonable to hypothesize that increasing the academic success of such children should function to decrease problematic behavior.

Curriculum Intervention

As a strategy for increasing the academic success of conduct disordered, underachieving students, a carefully designed curriculum plan was drawn up. For convenience, it will be called a *modified curricular approach.* "Modified" is used rather than "individualized" since a major objective of the plan's design was to provide a method by which behavior disordered students could proceed through materials and content areas at the same pace as other children in the regular classroom. To assess the effects of the modified curricular approach, a traditional approach was also studied for comparative purposes. Behavior disordered students receiving the traditional approach used the same texts and materials and received the same assignments and teaching procedures as the rest of the students in their classrooms.

Most of the procedures in the modified curricular approach were adapted directly from some of those of the structured approach, drawing heavily upon instructional methods of known effectiveness in the special class education of behavior disordered students. To provide illustrative and comparative examples, these procedures at times will be applied to the framework of a particular unit in some fourth grade social studies curricula, a unit involving comparison of the structures of state and federal governments.

The specific procedures in the modified curricular approach are: formulation of specific instructional objectives drawn from the broader goals; adaptation of content of the unit to meet various instructional reading levels; provisions for immediate corrective feedback; opportunities for visual reinforcement through self-graphing; and modification of existing workbook materials to promote the probability of successful responding.

Formulation of Objectives

As a preliminary strategy, several broad educational objectives were formulated by teachers who had taught the unit's content for several years. These were then translated into specific instructional objectives (Mager, 1975; Popham & Baker, 1970). For example, a broad goal of the curriculum content was for students to be able to identify and differentiate between the two houses of the legislative branch of government. One of the specific instructional objectives of this goal was that students would be able to list, in writing, at least two of the job responsibilities of members of the House of Representatives.

Adaptation of Content

Adaptation procedures are based on three presumptions. The first is that *at least several pupils in a regular classroom will be identified as possibly benefiting from a modified curricular approach.* Research suggests that regular classroom teachers identify approximately 20 percent of their students as exhibiting mild or moderate behavior disorders (Kelly, Bullock & Dykes, 1977). The second assumption is that a common characteristic of behavior disordered students is *underachievement in academic subjects* (Bower, 1969; Graubard, 1971). A study by Camp and Zimet (1975) pointed out that as reading skill levels, in particular, decreased, instances of deviant behavior increased. A third presumption is that *the regular classroom teacher will have the resources necessary to carry out the curriculum adaptations* critical to successful functioning of the mainstreamed behavior disordered students. Regular teachers must receive help in instructing mainstreamed handicapped youngsters. The procedures described, therefore, are designed to be carried out by the regular classroom teacher and a special education consultant teacher (or curriculum consultant with special education expertise) working in cooperation.

After sequential instructional objectives have been delineated, the content of these objectives of a particular

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unit of material can be adapted to meet individual instructional reading levels. This assumes, of course, that an accurate level is available for each student involved. An additional piece of information that may prove useful at this point is an accurate listening grade level score for students with particularly low instructional reading levels. Once these data have been collected, and the range of abilities ascertained for the pupils involved, adaptation activities can proceed.

A first strategy is to try to determine the existence of other textbooks that might approximate the content of the unit but at a lower reading level. If alternative texts cannot be located, the materials presently being used can be adapted. One possibility to consider is audio cassette taping of the reading content of the unit. Listening comprehension scores for each of the students involved in the modified curricular approach should be known in advance so that appropriate taping strategies can be planned. Two levels of taping of existing materials may be necessary. For students with grade level or above listening level scores, a verbatim reading of the text may be sufficient. (A check of the text's readability level should also be carried out.) Deshler and Graham (1980) have provided some interesting ideas about incorporating text usage and study skills into taped reading assignments.

> While taping a reading assignment, a teacher has an excellent opportunity to demonstrate how to differentiate between main and supportive material within a chapter; how to use illustrations, graphs, charts, etc. to aid comprehension; how to use questions at the end of a section or chapter to determine major points; and how to use chapter titles, section headings, etc. to skim a reading section for main ideas (p. 53).

An additional consideration for students with grade appropriate listening levels is whether or not the student should have the textbook in front of him or her to read along while simultaneously listening to the recorded version. Some research suggests that approximately two-thirds of students with reading difficulties profit from reading and listening concurrently, while the remaining third are confused by the double stimulus (Mosby, 1977). A quick, informal check of which of these two possibilities is most beneficial to a particular student may be necessary before proceeding.

If a student uses the text in conjunction with the tape, teachers might employ a highlighting and/or text marking strategy — a kind of "coding" system. This might involve marking, in various ways, text passages omitted in the recording, indicating others that are paraphrased on the tape, those recorded verbatim, and marking the places at which the student is to stop the tape (Deshler & Graham, 1980). An additional suggestion is to highlight major ideas with a transparent yellow marker, and important names or terms in another color (Mosby, 1977). Alternatively, and depending on the age and capability of the student, the tape might include directions for the student to carry out the highlighting activities.

A different form of taping is necessary when students have listening capabilities significantly below grade level or below the readability level of the textbook. In this circumstance, the taping involves simplifying the language of text passages to be recorded by shortening sentence length and explaining key vocabulary terms at the beginning of the passage. This level of taping might also include repeating major ideas to provide additional emphasis, as well as incorporating use of picture, map, and graph cues provided in the text (Deshler & Graham, 1980).

In planning individual tapes the person responsible for the recording must keep uppermost in mind the specific instructional objectives of the unit and ways of emphasizing these objectives. Additionally, length of recordings should be planned to match the attention spans of pupils who will use the tapes.

If audio cassette taping is a method selected for adaptation of materials, a systematic way of presenting these lessons is essential. One possibility is to provide a listening/learning center where students may listen to the tapes through earphones and where instructional objectives can be reinforced in other ways through non-reading tasks. Although taped materials may require a considerable investment of time initially, once made, students can use them individually as needed, without requiring a great deal of teacher supervision.

Provisions for Immediate Feedback

A further strategy to enhance successful acquisition of material is that of immediate corrective feedback. Knowledge of whether a particular response was right or wrong given in close temporal proximity to the response itself has been demonstrated to be an effective learning procedure (Gallagher, 1972). In the modified curricular approach, immediate feedback was designed to occur after students had responded to a short daily quiz involving a particular instructional objective presented in the day's taped lesson. In addition to allowing quick confirmation of correctness of response, this procedure also allows the teacher to assess student progress toward accomplishment of instructional objectives and to revise the next day's work, if necessary.

Opportunities for Visual Reinforcement through Self-graphing

Closely related to immediate feedback is the formulation of a way to visually display results of individual work. The daily quizzes mentioned above, for example, provide such an opportunity. Charting daily progress in the form of a bar, line, or other type of graph can be a highly effective extension of immediate feedback. Though students are usually capable of plotting their own graphs, teacher assistance in this activity can serve as a vehicle for praising students' academic accomplishments, thus building in another possible form of positive reinforcement.

Immediate feedback, self-graphing, and teacher praise — while generally effective strategies — may not be individually or collectively reinforcing to some pupils with mild behavior disorders. With those for whom these strategies do not work, alternative reinforcement procedures must be identified and implemented.

Modification of Workbook Materials

As an additional instructional strategy for promoting the successful learning of underachieving behaviorally disordered students, the consumable workbooks that often accompany hard cover texts can often be modified advantageously. Pages pertaining to the unit in question should be carefully examined, looking at the relationship of activities to specific instructional objectives, sequencing, and complexity of activity and response required. Color coding and visual simplification of the pages involved can increase the probability of successful responding in many instances.

An added suggestion is to provide each student with an individual folder in which to keep materials. Graphs, workbook pages, daily quizzes, and perhaps also the cassette tape appropriate for the day's lesson might be included in each child's folder as an organizational aid.

Motivational Intervention

Accompanying curriculum intervention, a second component — motivational intervention — was inserted into the total strategy because of the preponderance of evidence suggesting that increasing task-oriented behavior is a necessary precursor to increasing academic skills (but with a lack of evidence concerning its actual effect upon achievement). Three motivational procedures were initially designed, to determine which would be most effective in combination with modified or traditional curriculum and teaching methods in increasing adaptive behavior and academic achievement of behaviorally disordered mainstreamed students. These procedures, described briefly below, are: (a) reinforcement of attention to task; (b) reinforcement of a specified percent correct on academic tasks, and (c) a non-reinforcement procedure.

Reinforcement of Attention to Task

Among various reinforcement strategies, token economies have been found to be effective and comparatively easy to administer in regular classroom situations. In an attempt to explore and validate the possible effectiveness of this strategy as an intervention for behavior disordered students, points were awarded for a certain percent of attending behavior. To maintain the consistency necessary to evaluate the outcome, one point was given to each student who successfully attended to task for 90 percent of each 10-minute interval during the social studies period. At the end of each 10-minute interval, points were given (or students were told they had not earned a point), coupled with verbal praise by the teacher. At the end of the day or week, points could be exchanged for a variety of classroom activities or privileges.

Teachers could use a variety of other procedures that would reward attention on a more intermittent basis and thus provide more flexibility and ease of administration. Still, any methodical consequation of attending behavior is a time and attention consuming activity — a major drawback to this motivational procedure in the ongoing regular class.

Reinforcement of Percent Correct

Reinforcement of percent correct — in contrast to reinforcement of attention to task — is a precise and easily administered procedure. By pre-arrangement with the students involved, the teacher can award points on a sliding scale basis. In the case under discussion here, students received one point for 70 percent correct, two points for 80 percent, three for 90 percent, and four for 100 percent correct on daily quizzes or assignments. Again, the teacher accompanied the awarding of points with verbal praise, and points could be exchanged for classroom activities or privileges.

Students could earn a maximum of four points each day under either the procedure of reinforcement of

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attention to task or the procedure of reinforcing percent correct.

Non-reinforcement Procedure

In this procedure, students received no systematic reinforcement for any behavior. They operated under the same classroom consequence conditions as their "normal" peers (i.e., no point system was in effect).

EVALUATION OF THE INTERVENTION STRATEGY

A research design was implemented to assess the effects of curriculum variables and differing motivational procedures. Regular classroom teachers identified 23 fourth graders through use of a modified Peterson-Quay Behavior Problem Checklist (Peterson, 1961). (Conduct factor items only were used.) Students scoring in excess of one standard deviation above the mean for all fourth graders rated were considered as possibly behavior disordered. Classroom observation of each student thus identified served to confirm or disconfirm the rating scale selection. This observation revealed that all 23 students were attending to task less that 50 percent of the time during which they were observed. Upon examining the achievement test scores (Comprehensive Test of Basic Skills) along with the discrepancy scores provided in the achievement testing printouts, each of the 23 students was additionally found to be underachieving in several academic areas. All identified students scored significantly lower in the area of reading comprehension than did other students of the same age, grade, sex, and academic ability.

These 23 children were in four different regular fourth-grade classrooms. The four classrooms were then assigned at random to one of two curricular conditions, modified or traditional, each of which has been described previously. Classrooms rather than students were assigned at random to curricular condition to prevent one classroom from containing students assigned to both curricular conditions. Under the modified curricular approach a social studies unit in the regular curriculum was adapted to meet individual instructional reading levels, along with other modifications including formulation of objectives, provisions for immediate feedback and self-graphing, and adaptation of workbook materials. In the traditional curricular approach students used the same social studies text and received the same assignments and teaching methods as the rest of the students in their classroom. Their teachers were asked to teach as they normally would.

A t-test for differences between two independent means was used to test for differences between the group of students receiving the modified curriculum and the group receiving traditional curriculum on the variables of teacher behavior rating scores, reading comprehension grade level, and IQ scores. Results of these analyses indicated no significant differences between the two groups on any of these measures.

Each student, regardless of traditional or modified curricular condition, was administered each of the three motivational procedures (reinforcement for attention to task, reinforcement for percent correct, and a non-reinforcement procedure at some point during the evaluation process. Since the non-reinforcement procedure was essentially a baseline condition, all students were subject to this procedure first; the remaining two procedures were administered in random order to help counterbalance an order effect. The unit content was to be covered during a six-week period, so each of the three motivational procedures was in effect approximately two weeks.

The research design employed was a 2x3 factorial Analysis of Variance with repeated measures across one factor (motivational procedure). This method was used to determine significance of results in three areas: academic achievement, attention to task, and number of deviant behaviors. A further achievement measure was evaluated using a t-test for the difference between independent means.

Academic Achievement Results

Academic achievement for the group of mild to moderate behaviorally disordered mainstreamed students was measured over a six-week period in two different ways. First, students were given three periodic quizzes, at the end of each two-week interval, coinciding with the conclusion of a given motivational procedure. The quizzes were short (10-question) objective tests covering the social studies content presented during the period in question. Because all four teachers had agreed to cover the unit using the same time and sequence framework, these tests were identical for all students. A second measure was a domain-referenced test reflecting content of the unit developed by the authors of the fourth-grade social studies textbook. This test was administered as a post-test procedure to each identified student along with all other regular class students.

Results of the analysis revealed that the group receiving the modified curricular approach scored significantly higher (at the .05 level) than did the traditional group on both the periodic quizzes and the summative

unit test. Unit test scores were a mean of 8.2 percentage points higher for the modified curricular group, which also scored approximately 10 points higher on each of the three periodic quizzes.

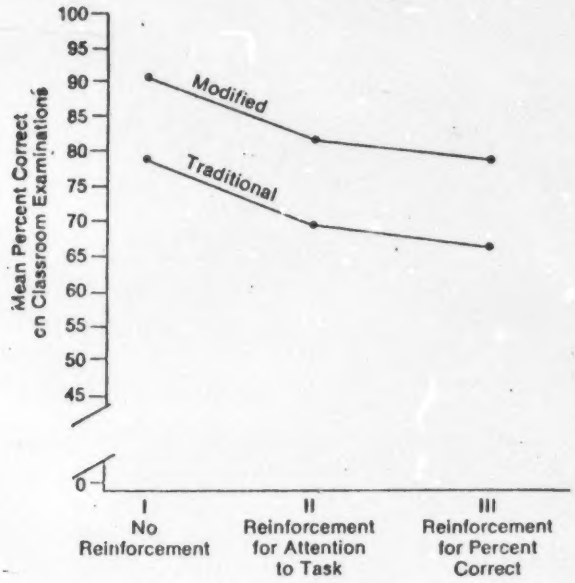

Figure 1. Means for percent correct on classroom examinations for modified and traditional curricular groups under three motivational procedures.

Upon first examining the effect of motivational procedure upon academic achievement (within-group differences), the non-reinforcement procedure seemed to produce superior academic gains for both groups over the other two procedures. Although the graphic data in Figure 1 seem to indicate scores for both groups becoming progressively lower, this conclusion is not warranted. As discussed before, the data do not reflect cumulative time spent under reinforcement since two motivational procedures were randomly assigned. Also, the first test, given invariably after the non-reinforcement procedure, pertained to material introductory to the unit in question and thus seemed to be a simpler test than the other two. Therefore, results may possibly be more reflective of item difficulty level of the tests than changes in motivational procedure.

Attention to Task Results

Attention to task was measured using a direct observation technique developed by Madsen, Becker, and Thomas (1968) and modified by Weery and Quay (1968, 1969). This procedure consists of classifying and recording specific overt classroom behaviors of individual children in three major categories: (a) on-task behavior; (b) deviant behavior; and (c) teacher-pupil interaction. The child is observed for two 20-second intervals per minute and behaviors recorded during the two 10-second rest periods. All behavior disordered students were observed and their behavior recorded daily for at least 15 minutes per student during their social studies period (approximately 40 minutes in length).

Upon analysis, between-group differences on attention to task thus measured were found to favor the modified curricular group. This group had significantly higher percentages of attention to task than did the traditional group. (See Figure 2.)

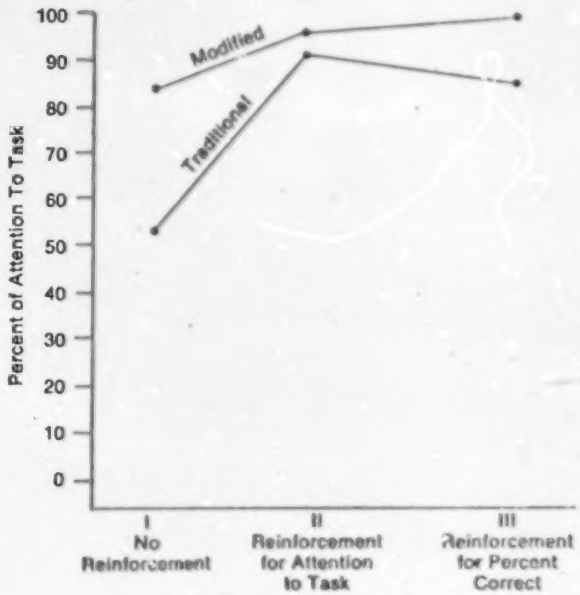

Figure 2. Means for percent of attention to task for modified and traditional curricular groups under three motivational procedures.

All three motivational procedures seemed to produce differential effects upon the two groups. The traditional group attended significantly more when this variable was specifically reinforced than they did under either of the two procedures. For the modified curricular group, however, reinforcement of attention to task produced significantly higher results over the non-reinforcement procedure only. The two procedures of reinforcing attention to task and reinforcing percent

correct had an equal effect upon the attention behavior of these students. Even for the traditional group, however, reinforcement of percent correct resulted in a significantly higher level of attention than did the non-reinforcement condition. The largest difference between the two groups (approximately 30 percentage points) occurred when no reinforcement was present.

Comparison of Deviant Behaviors

Deviant classroom behaviors of the mainstreamed behaviorally disordered students were measured using the same observation instrument as described under Attention to Task, above. A possible seven different behaviors could be recorded. A simple frequency count of deviant behaviors during social studies was obtained for each child daily. As might be expected, analyses of this factor closely resemble those for percent of attending behaviors.

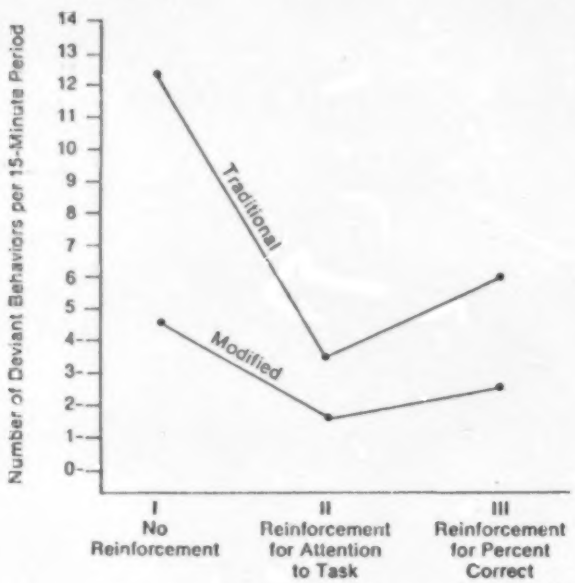

Figure 3. Means for numbers of deviant behaviors for modified and traditional curricular groups under three motivational procedures.

As can be seen in Figure 3, the modified curricular group exhibited significantly fewer deviant behaviors than did the traditional group. A post hoc analysis revealed that the traditional group had significantly fewer instances of deviant behaviors when attention to task was being reinforced than they did under either of the other two motivational procedures. However, they also emitted significantly fewer deviant behaviors when academic performance was reinforced than they did when no reinforcement was in operation.

Results of the analysis for the modified curricular group demonstrated that this group had fewer occurrences of deviant behaviors when either attention to task or academic percent correct was reinforced than they did when no reinforcement was given. Again, as in the analysis of percent of attention to task, they performed equally well under both of these two reinforcement procedures. One was not significantly better in decreasing deviant behaviors than the other.

IMPLICATIONS FOR TEACHERS

These data seem to point toward the quantitative superiority of a modified curricular approach over a traditional one when used with behavior disordered students in regular classrooms. Academic achievement as measured by percent correct on examinations was unequivocally higher for students receiving modified curriculum. An interesting implication for teachers is that reinforcement procedures did not seem to have a beneficial effect on the achievement of either group, even when achievement was specifically reinforced. A conclusion to be drawn from this combination of factors could be that a specific and organized change from traditional curricular materials and methods of using them is warranted in order for achievement to be increased for this type of exceptional student being educated in the regular classroom.

The data also provide further verification of the efficacy of strategies and procedures adapted from the structured approach concerning their use within a regular classroom and with a mildly handicapped population. A consultant teacher in cooperation with a regular class teacher possibly can design an educational intervention based on these procedures which will increase the academic performance of conduct disordered, underachieving children. The importance of this concept cannot be minimized when considering the circular nature of the relationship between academic deficiency and behavior disorders.

When attention to task is the factor being measured, the group receiving a modified curriculum again showed superior performances. This effect was particularly pronounced when no systematic reinforcement procedure was being employed. Without reinforcement, students in the modified curricular group attended approximately 85 percent of the time they were observed, whereas the traditional group had a mean percent of attending of

only about 55 percent under this procedure. When reinforcement of attention to task was specifically reinforced, the traditional group closely approximated the performance of the modified group on this dimension. This increase in attention, however, did not result in a concomitant increase in academic achievement for the group receiving traditional instruction and curriculum. Therefore, the effects of increased attention seem to be directly related to the specific variable being reinforced. Reinforcing academic performance had as beneficial an effect upon the modified curricular group's attention as did reinforcing attention to task itself. Both resulted in significant increases in attention over non-reinforcement, but neither produced significantly better results than the other.

This same effect also operated for decreasing deviant behaviors for the modified group. Implications of this finding for teachers might be that when curriculum and instruction are designed to be appropriate for the needs and abilities of conduct disordered, underachieving students, systematic reinforcement seems to further increase attending and decrease inappropriate behaviors. Importantly, reinforcing percent correct on daily exercises — a procedure that might be more easily managed by the classroom teacher than systematically reinforcing for attending — is equally as effective as reinforcing on-task behavior. Neither of these procedures can be expected to increase achievement, however, whether or not instruction is modified. Modification of materials and instruction in itself resulted in high rates of attending accompanied by significantly higher achievement.

Fewer deviant classroom behaviors were noted for the traditional curricular group when attention to task was reinforced as well as when academic performance was reinforced; and deviant behaviors were significantly fewer than when no reinforcement was operating. Again, though, decreased numbers of inappropriate behaviors did not lead to increased levels of academic performance. Therefore, it seems, without more basic curricular and instructional changes, the effects of systematic reinforcement (i.e., rewarding attention or percent correct) do not lend themselves to academic remediation, but do increase attention and decrease deviancy.

Finally, a major purpose of these explorations was to identify the most effective and efficient combination of factors concerning curriculum variables and reinforcement of behaviors which would lead to optimal academic success and behavioral adjustment for conduct disordered, underachieving students in regular classrooms. Based on the present analysis, this combination seems to be a *modified curricular approach paired with a token reinforcement system in which academic percent correct is rewarded.*

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FOCUS ON EXCEPTIONAL CHILDREN

A Systematic Approach for Changing Materials, Instruction and Assignments to Meet Individual Needs

Rosemary Anne Lambie

The ultimate purpose of changing existing curricular materials, instructional practices, and assignments is to meet the student's academic, emotional, and physical needs. When the student is not achieving at his or her expected level, three different types of changes can be made: adaptations to the actual commercial product or material; modifications in the manner of delivering instruction; and/or alterations in the nature or scope of the specific assignments. Each of these three variances requires that the teacher change existing practices. They may be combined and do not always have to be planned as singular efforts to meet individual needs.

The value of changing existing practices has been documented by research. Edwards (1977) found that changing a curricular approach for fourth-grade students with undesirable conduct resulted in significantly higher percentages correct on examinations. Materials and assignments were changed to meet each student's needs. The changes included audiotapes of the text, learning centers with nonreading tasks, and simplified worksheets to increase probability of successful responding.

A study by Lovitt and Curtiss (1968) investigated the effect of altering an assignment on correct response rate in arithmetic problems. The alteration involved verbalizing prior to making a written response rather than the existing requirement of only writing the response. Results indicated that the subject's error rate decreased and correct answers increased as a result of that alteration.

Harris (1972) investigated the effect on correct spelling responses under two conditions. One group of fifth-grade students received the regular approach. The experimental group received a modified approach that incorporated daily goals and immediate feedback concerning performance. As a result of the modification, the experimental group approximately doubled its correct spelling rate over baseline.

The preceding three studies suggest that changes in existing practices could be justifiable. In addition to research, a national needs assessment was completed through the U.S. Bureau of Education for the Handicapped (Vale, 1980). One finding was that

Dr. Lambie is an assistant professor in the Division of Educational Services, Virginia Commonwealth University.

49 percent of the teachers sampled thought training in how to adapt media and materials would be of great value. An additional 39 percent thought it would be of some value. Thus, both the perceived need of teachers and the success found in implementing certain changes support the basic value of the methodology presented here.

Planning for the three types of changes defined in this article should be based upon the specific mismatch of the learner with material, nature of instruction, or assignment. The mismatch is not always unique to the individual. It may be a result of inadequately designed material — in which case the teacher may find many students with the same mismatch. More frequently, though, the teacher finds that students vary individually in their responses to existing materials, method of instruction, or assignments.

The basic premise of the systematic approach presented here is tha. teachers must determine the type of mismatch that exists, then adapt materials, modify instruction, or alter assignments based upon that determination. Although a listing of "101 changes" may seem desirable to some, the author contends that teachers do not necessarily know when to select which type of the three changes for a specific mismatch. A systematic approach should provide teachers with a framework for facilitating the change process.

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REASONS FOR CHANGING EXISTING PRACTICES

As stated initially, the ultimate purpose in changing materials, instruction, and assignments is to meet individual student needs. Other reasons are:

— to avoid having to "reinvent the wheel," and still reach satisfactory solutions. Teachers, sensing inadequacies of materials, often set for themselves the difficult task of constructing what they hope will be the perfect match between learner and material. Not much can be gained in the long run from this laborious and defeating task. Needless to say, teachers have many additional tasks with which they must be concerned. Changes to existing materials and instruction represent an expedient alternative to teacher-made materials. Often simple adaptations will greatly improve upon learner/material match, at the same time freeing the teacher's time for equally important responsibilities.

— to enable students to remain in the least restrictive environment. Pupils are frequently referred for more restrictive placements because they are unable to keep pace within particular environments and settings. Changes based upon identifying specific mismatches may permit the student to remain in the same environment and be able to achieve success — albeit to the beat of a different drum.

— to stretch budget dollars. A limited budget for new instructional materials is a perennial problem for teachers. Sometimes, through a relatively simple change process, the teacher can use already purchased materials to meet students' needs. Adapting, modifying, or altering is far more economical than buying the variety of materials necessary to meet the needs of each student.

EXAMPLES OF THE THREE TYPES OF CHANGES

Most changes in the teaching process fall within the realm of adaptation of materials, modification of instruction, and alteration of assignments. To clarify the differences among these types of change, examples of three different mismatches relating to the same arithmetic assigament are given here. A change procedure is

presented for each mismatch. The assignment requires that students complete 30 two-digit addition problems in 20 minutes.

Adaptation of Materials

A behavior disordered student, Chris, found a whole worksheet containing 30 arithmetic problems too threatening. The teacher noticed Chris' avoidant reactions when observing that he was five minutes into the assignment and had not yet completed the first problem of the 30 assigned. The teacher asked Chris if he needed assistance. He replied that there were too many problems to do.

Although a teacher might choose to counsel such a student concerning the perceived threat of solving the 30 problems, he or she might also consider a more expedient strategy involving materials adaptation. The teacher could cut the page in half or in quarters and present only one portion at a time during the 20-minute period. In subsequent drills the teacher could gradually increase the number of problems presented at one time. The student would still complete the same number of problems but in smaller, less threatening blocks. The instructional practice does not change. The nature and scope of the assignment do not change. The only change is in manipulating the commercial product.

Modification of Instruction

A learning disabled student, Pat, failed to learn addition of two-digit numbers when the basal program did not utilize manipulatives. The student was given the 30 arithmetic problems without prior instruction. The five examples provided at the top of the worksheet were assumed ample to allow the student to complete the page. Pat attempted the problems, but the teacher noticed halfway through the worksheet that all the answers were incorrect. When the teacher asked Pat if she needed assistance, the girl said that the examples at the top of the page were not helpful enough when trying to solve the problems.

In this example the teacher could modify the manner of instruction by providing a place value chart and giving direct instruction along with it. A commercial product is involved, but the basic change is with the nature of instruction. The commercial product is not adapted. The assignment is not altered. Rather, the instructional practice is modified.

Alteration of Assignments

An educable mentally retarded student, Tim, worked more slowly than most students in the class and did not complete the 30 arithmetic problems within the stipulated 20 minutes. Observing the student's slow pace, the teacher did notice that Tim was correctly completing each problem. When asked if he needed assistance, the boy informed his teacher that he was just a slow worker.

In that case the change might focus upon altering the assignment of this individual student. The teacher could require the student to complete only 15 of the 30 problems. In doing so, the instruction is not modified and the commercial product is not adapted. The student's assignment, however, is altered to meet an individual need.

These three types of changes that teachers can apply are often combined. Teachers frequently find that materials adaptation has to be combined with modification of instruction or alteration in the assignment. With the arithmetic assignment of the preceding examples, a student might be unable to learn two-digit addition without manipulatives and also could be threatened by too many problems to complete during a 20-minute time period. Then, the teacher might modify instruction by providing a place value chart and adapt the material by cutting the page in half for the 20-minute drill — thus combining two types of changes.

POINTS TO CONSIDER BEFORE MAKING CHANGES

Prior to making a change, the teacher should consider several facets of the total learning process. Possibly, a change involving other than the material, instruction, or assignment is indicated. The following variables should be investigated and eliminated as possible agents of failure before instituting changes of the type advocated.

1. *Sensory acuity.* A student's lack of success in learning may be directly related to visual or hearing problems. In some cases eyeglasses or hearing aids may be all that is needed to turn failure into achievement.
2. *Level of functioning.* If a sixth-grade student is functioning at the fourth-grade level in arithmetic, any changes to sixth-grade materials, instructional procedures, or assignments are inadequate and insufficient. The student must have the necessary

prerequisite skills to function successfully at the sixth-grade level. No amount of change at the sixth grade level allows that student's needs to be fully met. Mismatches between a student's level of functioning and the grade level placement must be investigated as possible causative factors before instituting changes like those advocated in this article.

Related to this concept is that of readability level of instructional materials. The stated readability level of a product is not always the actual readability level. The teacher might apply a readability formula to a material to ensure selection of the appropriate readability level.

3. *Environmental factors.* Factors including lighting, noise level, and proximity of students to any type of distraction must be considered before deciding to institute changes in materials, instruction, or assignments. When environmental factors are found to be causative agents of failure, these elements must be restructured to maximize the learning process. Then the teacher may turn to other adaptations, modifications, and alterations if necessary.

4. *The consequences applied and the contingency or arrangement between the desired response and the consequence.* Adapting materials, modifying instruction, and altering assignments will not work if the cause of failure to learn relates to the contingency or consequence. In the earlier example of the behavior disordered student, assume that there were no mismatch (i.e., the 30 problems were really not too threatening) but that the student knew when he finished the 30 problems he would have to undertake a reading assignment he detested. If, instead of doing reading after the arithmetic, the student would have had the consequence of constructing a model airplane (a highly preferred activity), he would have been more likely to begin and complete the math problems. The difficulty, under that assumption, was not a mismatch of learner with material presented but was related to the contingency of completing the problems.

In the earlier example of the EMR student, assume that a mismatch did not exist (i.e., 30 problems were not too many). Also assume that the consequence was powerful (e.g., extra recess time) but that the student simply needed more time to complete the assignment. If the student were given 30 minutes instead of 20 to complete the worksheet, a change would have been made in relation to the contingency. This would not require altering the assignment, modifying the instruction, or adapting the material, but simply changing the contingency or time arrangement between the response and the consequence.

Each of the preceding factors must be explored and eliminated as causes of failure to learn before considering any of the changes discussed here. When those four factors have been resolved or ruled out and a student still fails to learn, the teacher should look for the possibility of a mismatch between learner and antecedents (material or instruction provided) or with the response required. Specific mismatches should be identified and followed by systematic changes in existing practices.

GUIDELINES FOR MAKING CHANGES

Some basic guidelines are necessary in actually planning and implementing changes in materials, instruction and assignments. Several suggested guidelines are discussed briefly.

- *Use the change process only when a mismatch occurs.* Although implementing change may seem like an interesting process, it should be done only if a mismatch exists between the learner and material, instruction, or assignment. And it should not be undertaken unless all of the prior considerations are eliminated as causative factors in the pupil's lack of learning. This means that the teacher must be certain of no sensory acuity or classroom arrangement problem, that the presentation and requirement are at the student's current level of functioning, and that effective contingencies and consequences are being carried out. Only then should the teacher consider mismatches of materials, instruction, or assignments with the learner.
- *Keep the changes simple.* Elaborate changes may seem pedagogically sound, but teachers should focus on the simplest change process possible that is still effective and efficient. When changes are too involved, they destroy a major advantage of the change process in that time expenditure becomes magnified.

Figure 1 illustrates, through a student's worksheet, an example of a student/material mismatch. The directions required that students discover a pattern for each horizontal line and fill in the appropriate numbers. For example, the correctly completed top line should read: 2,

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2	4	100	___	104	12
3	100	101	___	103	13
5	___	102	___	25	14
95	___	___	98	26	100
96	10	19	20	25	101
25	11	41	40	26	50

Figure 1
Example of an Incorrectly Completed Worksheet showing a Mismatch between Learner and Material

2	4	6	8	10	12
99	100	101	102	103	104
5	6	7	8	25	26
95	96	97	98	99	100
5	10	15	20	25	30
25	26	27	40	28	50

Figure 2
Example of Student Worksheet showing Improvement after a Systematic Change Process

4, 6, 8, 10, 12. After looking at the student's worksheet, the teacher diagnosed that the mismatch related to the student's misunderstanding the directions and confusion about directionality. He had tried to form sequential number patterns in all directions, including bottom to top and right to left.

The teacher in that example would have a variety of options to consider in eliminating the mismatch, including: (a) drawing arrows between lines and numbers (adapting material); (b) providing a correctly completed sample (adapting material and modifying instruction); (c) giving oral instruction concerning left to right and top and bottom (modifying instruction); (d) providing a tachistoscopic sheet allowing the student to see only one line at a time (adapting material); or (3) supplying a ruler for the student to move down the page one line at a time (adapting material).

In selecting the change, the teacher should look toward the process that would most expediently eliminate the mismatch and result in student success. Simply giving the student a ruler would be expedient, but he or she probably would not know what to do with it and, thus, would likely continue to do the assignment incorrectly. If, however, the ruler were supplemented with teacher instruction and demonstration, the combined change might result in success. If not, a tachistoscopic window could be introduced in place of the ruler. Each of the above options is potentially workable and simple.

A major advantage of simple changes is that they require little teacher time to plan and implement. The best change is one that is quick and easy and also leads to student success.

- *Confirm mismatches by evaluating changes made.* The teacher should take data to determine if the

change was appropriate. The hypothesis concerning the mismatch and a solution is confirmed when the data show that successful learning has resulted. If the data indicate that the student's need was not met, the teacher should systematically vary the change until achievement is realized.

In the example of Figure 1, assume that the teacher were to introduce use of the ruler along with oral explanation. Figure 2 illustrates 66 percent accuracy on the same worksheet when employing this change. When analyzed using the diagnostic process to determine type of error, the responses on Figure 2 show that the student indeed benefited from the change. But the student did not correctly insert numbers in the 5s sequences unless at least two of the numbers were present initially in the sequence.

In this case the teacher could choose to write those numbers into the sequence (adaptation of material) or instruct the student on how to look at the whole sequence before attempting to write the answers (modification of instruction). By using a diagnostic process and systematically varying the change, the teacher maximizes the probability of meeting individual needs.

- *Minimize teacher time in making changes.* Teachers should not spend too much time on planning or manipulating changes. Change processes that are effective while requiring the least teacher time are desirable. If two or more possible solutions appear to be equally good, selection should hinge upon the change that requires the least teacher time. Teachers should also keep in mind the possible utilization of supporting personnel. For example, cross- or peer-age tutors may be able to help monitor and explain requirements; parents or volunteers might be asked to assist in change processes involving making materials more durable, rewriting information in a different format, and audiotaping lessons.

- *Keep combinations consistent.* When trying to supplement a program or material that does not allow for enough practice, be sure the supplementary material is compatible with the basic approach. For example, a teacher would not want to use initial/teaching/alphabet materials to supplement the basal reader. In the same manner, a non-inquiry text approach in science should not supplement an inquiry approach. Supplemental materials that differ in basic instructional approach can cause a great deal of confusion in verifying the type of mismatch that exists and the solutions attempted (e.g., supplementary material). On the other hand, a supplementary material that is consonant with the basic approach might be effective.

- *Know the strengths and weaknesses of the instructional material.* If the teacher is aware of the strengths and weaknesses of materials, mismatches with students are easier to identify. For example, if a company tends to publish worksheets with confusing directions, the teacher might guess ahead of time what problems might occur. One product with specific weaknesses presents four different arithmetic operations on one page, gives few examples, and has no illustrations. Knowing this, the teacher can mentally plan for mismatches and can easily make a change if students have difficulty in completing the work satisfactorily.

- *Know the pupil's strengths and weaknesses.* When the teacher is aware of students' strengths and weaknesses, mismatches are easier to identify, as are the types of solutions that might be applied. For example, if the teacher knows that a certain student has difficulty in oral spelling from dictation, a visual written response mode may be indicated.

  One student had considerable difficulty in verbalizing that 167 is greater than 159. She also had difficulty remembering the signs < and >. Knowing this, the teacher changed the response mode (alteration of assignment). The student used the same worksheet but was asked to put an X on the larger number in each problem on the worksheet.

  The teacher also benefits from knowing if a student is impulsive or deliberate or has other such characteristics. Sometimes style interferes with learning, and not the material, instruction, or assignment.

QUESTIONS TO ASK IN FACILITATING THE CHANGE PROCESS

Changes in existing practices should be based upon specific mismatches between the learner and material, instruction, or assignment. Systematizing the change process, to maximize the probability that a change will be more effective than existing practices, is accomplished through a questioning or empirical approach. The teacher poses a variety of questions as possible causes of mismatches between learner and materials, instruction, or assignments, then considers tentative solution(s) to the

mismatches. Selection of the type of solution (adaptation of material, modification of instruction, or alteration of assignment) is based upon economy of teacher time and probability of eliminating the mismatch. The teacher then systematically varies the change until the mismatch is corrected.

The following questions relate predominantly to antecedents of the instructional process although some relate to the nature or scope of the response required. Each question is followed by hypothetical mismatches and possible solutions to these mismatches.

The key to successful use of the change process is in asking questions that lead to discovery of the type of mismatch that exists. The mismatches and possible solutions presented here are intended to assist teachers in understanding the process by which solutions are planned. They do not represent an exhaustive listing of possible changes but, rather, a sample or cross-section of situations often encountered. The potential solutions are not necessarily the only or best answers, but show some of the options that may be considered.

1: What if there are too many (items, pages, questions, etc.)?

A frequent problem that students face is the "too many" requirement. Two examples are given along with potential solutions.

Too Many Math Problems

The teacher notices that a student does not complete all the assigned math problems in the time allotted. The problems that are solved are correct.

— *Adapting the Material/Altering the Assignment:* The teacher cuts the page in half so the student will not have to complete all the problems. This is a quick and easy alternative but may not represent the most optimum solution. If, as in most practice worksheets, the problems are arranged from easy to difficult, the student may end up with an inaccurate representation of the total assignment. A brief analysis of the material would reveal if this were the case. If not, that solution could be judged worth trying.

— *Adapting the Material/Altering the Assignment:* The teacher selects the problems the student needs for practice, then stars the ones judged most valuable. This is a quick and easy change that takes into account the student's needs and provides a balance from among the total worksheet problems.

— *Altering the Assignment:* The student is asked to do all the odd or even problems. Again, the teacher first has to assess the worksheet to determine what effect this solution will have in relation to worksheet requirements and student needs.

Too Many Pages to Read

A student does not complete all of the silent reading assigned in social studies.

— *Altering the Assignment/Adapting the Material:* The teacher tape records every other page. The student reads one page silently, then listens to the next page. The major change is in the assignment required of the student, as he or she is now required to read only half the amount. It also utilizes another learning modality (auditory).

— *Altering the Assignment:* A similar alteration is to have a peer- or cross-age tutor read every other page to the student. This may be a long and laborious process and requires a more able, patient student to be paired with the slow learner.

2. What if there is not enough repetition?

This is a major concern when using some developmental materials. Without necessary practice and drill, students with learning problems can easily fail to fix the concepts and skills necessary for retention.

Too Little Problem Solving

After students have been taught a new computation skill, they need enough practice to fix it in their minds before building additional skills. Some texts and materials provide too few practice problems.

— *Altering the Assignment:* The teacher supplements the assignment with materials that cover the same skill and allow extra practice. For example, kits graded and organized for practice according to specific skills can be used to provide the necessary repetition of skills. Although materials are involved in doing this, the real change is in the scope of the assignment. The student is required to do more. This solution is quick and easy. It meets student need, yet requires little teacher time. A drawback, however, may stem from the budget for materials.

— *Altering the Assignment/Adapting the Material:* The teacher makes worksheets to provide for extra

practice. Or the teacher makes transparencies, which are then projected on the blackboard. These solutions are not quick and easy, though. The teacher expends considerable time in constructing the change, even if older students or volunteers assist. Other solutions may be better.

3. What if a lack of feedback results in problems when students use the material independently?

A major consideration in teaching is that of uninterrupted direct instruction of small groups of students. That necessarily requires that some students who are not at the level of the group receiving instruction must work independently at times. As a result, the independent learners may suffer from a lack of immediate feedback.

No Feedback Provided

The student cannot confirm answers and therefore has difficulty in building skills and concepts upon known information.

— *Adapting the Material:* The teacher writes the answers directly in the workbook or text in yellow ink. Before looking at the page, the student places a transparent red plastic sheet, like a theme cover, over it, which neutralizes the answers. The student writes answers on a separate sheet of paper one at a time, after which he or she unmasks the correct answers to see if they match. This is a fairly quick and easy process when only a few students and books are involved.

4. What if the visual presentation is too confusing?

A frequent problem of students — that of focusing on the pertinent elements of visual presentations — sometimes must be facilitated by teachers. Generally, the problem centers on lack of attending to significant detail.

Visually Too Confusing

At times students are given worksheets requiring a variety of responses (e.g., fill in the blank, write a sentence) on one page. This can be confusing for some students.

— *Adapting the Material:* The teacher makes a tachistoscopic window to reveal only a portion of a page at one time. A piece of construction paper is cut such that the right sized window reveals one item at a time. This is a quick and easy adaptation of the commercial product if items are all of the same dimensions.

Confusing Transparencies

Sometimes, commercially prepared transparencies are confusing. Students may have trouble focusing on significant details.

— *Adapting the Material/Modifying the Instruction:* The teacher uses carefully cut masks like that described above to focus students' attention on the unmasked stimuli. The teacher also could simply provide a piece of paper that is to be moved downward one line at a time, thereby restricting the detail to which the student is exposed.

5. What if students do not remember or understand the directions?

Many students have difficulty with oral and/or written directions. The teacher should determine if the directions are the sole problem or whether the lesson is too difficult.

Problem with Oral Directions

Teachers frequently give oral directions in class. Some directions require a relatively long attention span as well as good short-term memory. Some students do not recall the sequence or detail of oral directions.

—*Modifying the Instruction:* The teacher tape records directions. These may be expanded, if necessary, with added steps for students who require more detail and smaller increments.

— *Modifying the Instruction:* The teacher appoints a peer tutor to coach students through step-by-step directions. Peers often "speak each others' language" better than the teacher and can more quickly clarify misunderstood directions.

Problem with Written Directions

Written directions may be difficult to understand or follow. The problem may not be with memory in these cases, but with confusion in trying to determine the logical breakdown and sub-steps or increments.

— *Adapting the Material:* When worksheets have paragraphs containing multiple directions, a teacher uses colored dots or numbers to differentiate the separate directions. Each paragraph contains several sentences, and students benefit from knowing where one direction ends and another begins. Thus, they are led to complete one step before starting the next.

— *Adapting the Material:* In a similar circumstance, a teacher uses colored marking pens or pencils, underlining each direction with a different color. This is not as quick and easy as the above adaptation but may be better for younger students.

6. What if the material, lesson, or assignment is not interesting?

Not all things we do in schools or in life have inherent interest. Students should not be deluded into expecting everything to be interesting. At times, though, boredom and sameness reach limits and teachers should turn to forms of motivation.

Oral Lesson Drags

Teachers provide considerable oral instruction in classes. At times the lessons may be boring, yet necessary. For example, teaching parts of speech can be uninteresting to students.

— *Modifying the Instruction:* Teachers use a variety of techniques to make lessons more interesting. Puppets increase interest among younger students. The teacher's personality also makes a big difference. One's voice can elicit a great deal of responsiveness from others. And teachers can point out the relevance of the lesson to students' interests or goals.

Boring Seatwork

Much student seatwork is inherently boring. Teachers tend to drown students in a sea of purple ink that often results in ennui and restlessness. To combat this, teachers can use interest inventories with students as an aid in selecting materials.

— *Modifying the Instruction:* One motivating solution to the boredom dilemma sometimes is found by introducing self-competition. For example, the work is clocked so the student is able to chart progress in correctly completing items within specified times.

— *Modifying the Instruction:* The student is instructed on how to keep data on performance and how to record the results in an interesting way (graphs, charts, using color, and so forth). Self-recording of performance is a relatively quick and easy option. Although it is not effective with all students, it represents a definite possibility in eliciting task behavior of otherwise turned-off students.

7. What if the product is not durable?

This may be a concern, especially with behavior disordered children. Some pupils tear up instructional materials, rendering them useless. Not all material can be made durable, but it is a factor worth considering. Most important is to make sure that the material used will meet student needs, *then* figure out if it can be made durable. Devising durable material that is unsuitable, of course, is wasted effort.

Paper Product is Destroyed

Some students rip, tear, and otherwise mangle instructional materials. Replacing destroyed materials can be expensive and may result in selection of materials based only on durability factors rather than on pupil material match — an illogical practice.

— *Adapting the Material:* Once a teacher has determined that a certain material meets the needs of a student who tends to be destructive, the teacher investigates the best possible means of making it durable. The most widely applied change is to laminate pages. Another adaptation involves covering pages with clear contact paper. These measures are usually beneficial. Some pupils, however, are so destructive that other measures are necessary. The optimum solution, for small amounts of material, may be to place it on pressed board and spray with acetate. This also allows destructive children to use the adapted material with less supervision than normally would be necessary.

8. What if the material/lesson moves too rapidly?

Printed and oral instruction is sometimes too rapid for certain students. Slowing down the pace, however, can produce boredom in students for whom the pace is not too rapid. Alternatives must be found and implemented.

Lesson Moves Too Rapidly

Group instruction is not always successful with special education students. One contributing factor is the failure to pace lessons so that students can benefit.

— *Modifying the Instruction:* A peer tutor is assigned to take copious notes. Later, slower students ask questions of the tutor and look at the notes. Also, lessons might be tape recorded for homework.

9. What if the lesson is too complex?

This situation is frequently encountered in group instruction and when using developmental sources with students having learning problems. When employed strictly as the teacher's manual directs, the lesson can result in failure to meet certain students' needs.

Parts of a Glossary not Understood

Learning to use a glossary or dictionary requires that a variety of skills be called into play. This learning sometimes takes place more readily when it is broken down into separate components.

— *Modifying the Instruction/Adapting the Material:* The teacher makes a base transparency presenting only the words, an overlay adding the diacritical markings, and another overlay with the definitions. This change may be long and laborious, but it might be the only good solution. The transparencies, of course, can be saved and used again and again when similar needs arise.

10. What if the presentation sequence of skills/concepts is too brief and choppy?

Materials often present skills/concepts with little practice provided, then proceed to a new skill/concept. Students with learning problems often need more instruction and practice with one skill/concept at a time.

Teaching Money Handling Too Sporadic

The text presents money handling on five pages every 60 pages. A student has difficulty learning the concepts involved.

— *Adapting the Material/Modifying the Instruction:* The teacher removes all of the pages dealing with money handling. These are placed in a folder or bound for use as a smaller text and presented as a unit. (The change need not be so dramatic. Teachers could assign and cover the pages as a unit by skipping around the book — certainly a quick and easy modification.)

11. What if significant information is not focused upon?

Discerning the most important and useful information is a necessary skill that has to be learned. Without it, students can be mired in irrelevance, unable to bring together features to make realistic conceptualizations.

Significant Written Detail Ignored

Some students have difficulty selecting the important information in reading assignments. The teacher poses comprehension questions that the student answers incorrectly.

— *Adapting the Material:* The teacher uses a color coding system that informs the student of main ideas or significant details. For example, a red mark in the margin could indicate passages dealing with the main idea, and a blue mark could denote significant detail. Undertaking this adaptation would be long and laborious for only one teacher. Therefore, teachers should combine their efforts in marking materials and teacher's editions of texts, and trading them so they can all benefit from the effort. First, they must develop a common coding system that will work for everybody. Then it becomes an ongoing process that could be almost automatic. Assuredly, teachers will encounter students from time to time who need this adaptation, so it does not represent a one-time-only change.

Significant Transparency Detail Ignored

Some students have trouble cueing into significant items of transparencies and chalkboard presentations.

— *Adapting the Material:* The teacher stars the most important points during presentations and underlines other details while raising the voice to connote importance.

Significant Oral Detail Ignored

Students sometimes have difficulty sorting out the most important elements of a lecture or discussion.

— *Modifying the Instruction:* The teacher defines a purpose for listening; for example, "We'll be talking about the sun, with particular attention to how the sun benefits life on our earth." Cueing the student that "this is important" might be enough to elicit specific attention. Also, the teacher could pause at strategic points and say, "You'll want to remember this."

12. What if the language level is too high/different?

Written and oral instruction may be at a level some students do not grasp. The problem may be dialectical, syntactic, or semantic.

Oral Language Misunderstood

A student may not understand implications of an oral lesson. And group situations make it difficult to know whether the student is comprehending the language and conceptualizations.

— *Altering the Assignment:* The teacher devises individualized tasks for the student, using a tape recorder. The feasibility of stopping the tape recording allows the student to replay portions and to use a dictionary if necessary. This alteration is most beneficial when the lesson is no longer than 15 minutes. If required to listen to tapes for long periods, students may become inattentive.

— *Modifying the Instruction:* Students often communicate at a level best understood by peers. Knowing this, the teacher simply requests a "peer translation" when students indicate from time to time that they don't comprehend something in a presentation.

13. What if purchased commercial products assess recall only?

Although this is a problem with materials rather than students, some students may become dependent upon recall at the expense of comprehension, decision making, and other important facets of learning.

Only Fact Questions Covered

Questions in some teachers' manuals and at the end of reading selections in certain student texts emphasize recall of facts ignoring the value of inference, drawing conclusions, and total comprehension. This is not a learner/material mismatch but requires attention in changing the material.

— *Adapting the Material:* The teacher supplements existing material with a variety of comprehension questions, written or typed, and duplicated. An answer key could be developed for teacher or student correction. Such changes should be planned for future use and use by other teachers. If several materials require change, other teachers or older, more capable students could take this on as a project. For example, a high school honor society might be willing to do it, or the local chapter of The Student Council for Exceptional Children might adopt it as a project.

14. What if the material/lesson is biased?

Again, this is a problem with the material, not a student mismatch. But teachers should not condone bias in the products used and should make changes when necessary.

Racial Bias

Minority races are often ignored in material, or portrayed in a discriminatory way.

— *Modifying the Instruction/Adapting the Material:* The teacher discusses discrimination and stereotypes portrayed in print, then asks the students to underline discriminatory statements. Although this does not change the material, it allows students to see it from a different vantage point.

Gender/Career Role Bias

Another form of bias in material is that of sex role stereotyping. For example, physicians and mechanics are generally male, and women are housewives, secretaries, and stewardesses.

— *Modifying the Instruction/Adapting the Assignment:* Before giving an assignment that involves reading, the teacher discusses sex and career role bias and asks the students to look for evidence of that in the reading selection. They could underline or in some other way indicate their findings.

15. What if verbal response is a problem?

A student may not be able to produce an adequate or correct verbal response.

Inadequate Verbalization

The student may know an answer, yet be unable to verbally respond in an appropriate way because of some handicap. For example, a child may know a cap from a coat but be unable to say, "This is my coat."

— *Altering the Assignment:* If the teacher is working only on receptive vocabulary, it is possible to determine whether the student really knows an answer by changing the response mode required. For example, the student could be instructed to "point to your cap . . . coat." Or a deaf child could sign the answer or underline the correct answer in print.

— *Altering the Assignment:* With other cases of mental or physical handicap, the teacher requires the same response mode, but at a simpler level. For example, the teacher could ask, "Is this your coat?" and require only a yes or no answer or a nod or shake of the head. This may or may not be preparatory to teaching the associated verbalizations.

16. What if the motor response is too difficult?

Similar to verbal responses, motor responses are too difficult for certain students and may lead the teacher to

believe the student does not know something. The student may actually know the correct answer but simply not be able to execute the motor requirement.

Inadequate Motor Response

An example of problems with fine motor skills is shown in illegible handwriting.

— *Adapting the Material:* The student is given a different writing implement, which might be a thinner or thicker pencil; or a rubber gripper is attached to a pencil. Another aid is a wire frame (Zaner Blaser Company) to mold the student's hand in the correct position. Or the teacher wraps tape around the place where the student should hold the pencil.

Written Spelling Words Incorrect

In spelling the student consistently writes the words incorrectly.

— *Altering the Assignment:* The teacher asks the student to respond in a different mode. For example, the student might spell the words orally. Another alteration could be to have the student circle the correctly spelled word of four presented. Or a typewriter could be used by students with fine motor or other physical problems.

CONCLUSIONS

The preceding 16 questions can be helpful to teachers in understanding some of the types of mismatch that exist and possible changes to neutralize them effectively. Focusing on a specific problem allows the teacher to more successfully adapt material, modify instruction, and alter assignments to meet individual needs. The possible solutions to the 16 questions are only representative of the potential answers. Teachers should consider them as merely examples and not bind themselves to using any or all of the solutions given.

The real value of the empirical process recommended in this article is that it liberates the teacher to use a systematic, questioning approach to brainstorm a variety of possible changes. The teacher then can concentrate on selecting a change — preferably as quick and easy as possible — that has a good chance of working to the benefit of students. If the first change is not completely effective, the teacher is free to systematically try other changes. This approach is far superior to the trial-and-error, hit-and-miss or leave-well-enough-alone philosophies that have prevailed in some classrooms for lack of better methodology. It provides a framework and structure for change that can be instituted without undue effort on the part of the teacher — and with results that are demonstrated by student success in learning.

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CURRICULUM MODIFICATION FOR SPECIAL NEEDS AT THE SECONDARY LEVEL

Susan Blom Raison

Secondary education is often perceived as being more resistant to mainstreaming than elementary education and oriented to subject matter as opposed to students. Based on my experience as a resource teacher, I'd like to discuss some reasons for this belief and offer some suggestions on how to facilitate accommodation of special needs students in secondary level classes.

Academic content of secondary subjects is obviously more complex than at the elementary level. Therefore, a thorough command of the subject matter is required before modification can take place, a command which many special educators may not have or have forgotten. This relative lack of expertise, particularly in the areas of science and social studies, may be a partial explanation for the perceived resistance to mainstreaming. Without mastery of a given field and awareness of available curricula, resource teachers are hard pressed to suggest alternative assignments for students who are not "making it" within the regular program. In fact, it could be said that knowledge of regular secondary curricula is a generally weak area for many special educators. Our bag of techniques may include methods for basic reading, math, and writing, but the bag does not contain the current curricula being used in a junior or senior high school.

By junior high and senior high school levels, the range of skills within a school can cover 7 to 12 grade levels, a much broader range than in the elementary school. If a school has heterogeneous grouping, very complex programing is required to match the needs of this range of students. If a school has homogeneous grouping, programing may be somewhat easier, but issues of motivation and management may be paramount interferences to learning. Often because of departmental divisions, it is more difficult for teachers to discuss individual children and underlying processes of learning interdepartmentally. Since secondary students are becoming firmer in their identities and tend to challenge authority, they may not accept program modifications, feeling that they do not want to be different from others. Teachers are not reinforced for trying to individualize programs. All of these factors contribute to the greater difficulty in mainstreaming at a secondary level.

. . . It could be said that knowledge of regular secondary curriculums is a generally weak area for many special educators.

The focus herein will be on curriculum modification, using examples from a heterogeneous junior high school where I was a resource teacher in Massachusetts. Suggestions are given with mild/moderate special needs and gifted students in mind, and apply to the major academic subjects.

Overall Issues

■ *Assignments.* It is often helpful for students and monitoring parents to have weekly assignments given in ditto form. This can provide the basis for weekly progress sheets which help disorganized students become better organized. However, if this does not fit a teacher's style, reinforcement of student use of assignment pads or writing assignments on the board can also work. So can the establishment of a routine pattern of assignments, such as weekly quizzes on

specified days, or compositions due on the first of each month. If none of these suggestions fit into a teacher's style, the minimum suggestion would be to not change assignments frequently once they are given.

■ *Aids to Learning.* Math and science are subjects which are often organized into procedures and steps which can be followed more easily by students with conceptual problems. In English and social studies it may be more difficult for students to know how to approach the subject matter. Students benefit from explanations and checklists which specify for instance, how to read a textbook (look at bold face type, pay attention to pictures and diagrams), how to read a novel (keep a list of characters and major events), how to organize and then proofread a composition, or how to set up an independent study project.

■ *Level of Abstraction.* Students of all levels need concrete examples to understand concepts. Teachers may not realize how concrete they have to be in the here and now with some students. Again, math and science have an edge in the use of examples in texts and experiments. However, even here a concept like diffusion can be tricky. It was aptly demonstrated by one science teacher by having all her students bunch up in a corner and then spread out over the room.

■ *Grading.* One option for handling the frequent shock of grades on secondary level when students move out of a nongraded elementary setting, is to start grading earlier, or have a transition grading period the latter part of elementary school. Another option for reflecting individual and comparative growth in grading is to have two grades. The old effort and achievement divisions could be used, or individual growth and comparative growth grades could be given with consultation from the resource teacher.

Modification of Existing Curriculum

■ *Structure of a Class.* Cross-age tutoring can sometimes work with students who are not too "touchy." Group projects sometimes provide a range of tasks and roles which accommodate differences well. Alternate assignments for the whole group, extra credit work, and two level tests are other possible attempts at variation. The issue of increased material for teachers to grade can be partly managed by having the resource teacher help grade extra credit or alternate work or by giving oral quizzes after school.

■ *Content.* Books can be taped, although this involves planning ahead and is time consuming for the student to listen to. The familiar use of projects, and puzzles and games can be hit or miss propositions, with the project idea requiring a motivation that does not always exist. Games may be more successful when used with an entire group. Organizing tasks into steps or finding programed learning modules is often useful, as is the introduction of any high interest activity (field trips, visitors). Cues and crutches foster compensation at this level. Mnemonic tricks, use of multiplication charts, songs about parts of speech, and color coding can all help. Lastly, sometimes altering pace or amount of work can make the crucial difference in matching needs. Going slower, or faster for gifted students, using more or less repetition, and giving less or more work can help.

Sometimes working within the existing framework (of curriculum) is not enough.

Mary is a good example of how modification of existing curriculum worked. She was a conscientious ninth grader who had tremendous difficulty understanding and remembering concepts. One day she would seem to understand how to convert fractions, the next day she wouldn't. The themes of Roman history or books such as *Animal Farm* were little more than meaningless notes she took down on a page. Luckily, Mary displayed unusual effort and had a knack for memorization and organizing her homework. Her attitude made a difference to her teachers.

Even though she was in the lowest math class in her grade, she seemed to need even more repetition, so her math teacher and I worked out extra practice in the resource room each week, using mixed problem sheets to test retention out of context of a unit. In social studies, her teacher assigned projects in Roman history to the class, and Mary was able to do a project on Roman hair styles and cosmetics which used her artistic skills. In English, her teacher made arrangements for me to see the tests on the reading ahead of time to make sure that she understood the meaning of the words used in the questions (once she confused "emotion" and "motion" in a question), and the basic themes of the book, without revealing the specific questions on the test. It was a credit to the ingenuity and flexibility of her teachers and Mary's stamina that she had a productive and successful year.

Changing Existing Curriculum

■ *Structure.* Sometimes working within the existing framework is not enough. Independent study projects in place of a course (or after having passed an equivalency test) can be used with gifted students. Allotted time out of the building can be an added reinforcer. Mini or alternative schools, although they have fallen out of vogue in many places, may be required for a student whose needs are totally missed by the existing curriculum. Graduation requirements may need to be varied on a continuum, and certificates of attendance may be appropriate for some students.

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■ *Content of Curriculum.* Significantly lower level texts or assignments are sometimes required for students when highly complex material proves too difficult. These options are often more resisted by students than class alternatives since they signal "you are different." In some cases there is no other choice. How this difference is handled by the teacher can either facilitate or prevent the student from coping with the situation. Private conferences or working through the resource teacher can help save face.

In guiding the choices of significantly simpler or different content, a list of priorities would be useful. Often schools have curriculum guides. Such guides, or the creation of others could be used to arrive at a list of competencies in order of priority for each subject area. If all a student learns for a semester is how to write a complete sentence consistently, that is still an accomplishment. Such priority lists ideally should be made as well for the whole school across content areas, to provide perspectives in terms of job skills, and self help survival skills. Sticking with the priority goal set for an individual child takes perseverance on the part of a teacher, but can be a beacon in the face of all that a student may *not* know.

■ *Process/Approach to Task.* It may be that a student needs to learn *how* to learn, or for the gifted, to learn how to go beyond content. Task hierarchies or stages of cognitive development may be valuable frameworks for structuring learning approaches. Students may need to develop attention, memory, conceptual thinking, task completion, oral language, or basic organizational skills (keeping track of materials, taking notes, making outlines, taking tests). I imagine that there are many nonspecial needs students who could benefit from reinforcement of these processes in the context of regular classes. For talented students, training in critical thinking, searching for implications, and use of information for decision making could beneficially expand their approaches to tasks. Contracts with students can spell out such process goals.

■ *Socialization.* It may stretch the term "curriculum" a bit to include socialization, but this certainly is an everyday task of teachers. Poor impulse control or self esteem or poor interaction skills may sometimes be major deterents to learning. Most teachers readily sense the futility of trying to teach complex sentences or the use of fulcrums to a suicidal student or to one who constantly fights angrily. It is harder for secondary teachers to rest easily with behavioral goals exclusively, but in the long run, sticking to a broader perspective for some students is more satisfying if growth is apparent. Again, contracts specifying goals are helpful.

Making (major curriculum) changes during a school year is like trying to cross a bridge while you're building it.

A case in point where curriculum was modified substantially is John, another ninth grader, who had second grade reading skills, word finding problems, minimal memory skills, and a nasty temper to boot. He was painfully aware of and sensitive about the difference between himself and other students, saying to resource room staff, "I *look* the same as the rest of them don't I?" He took science, electronics, and shop, which he enjoyed, and then went to the resource room for math and a double period of reading/language.

His speech teacher, whom he saw an additional period each day, and I worked out a master list of words, which covered vocational and real world areas (terminology from applications, street signs, etc.), interests (he loved beer can collecting), and words from his science and shop worksheets (direction words, and some words like "piston"). He tackled ten words every two weeks, working on them in speech and in the resource room a total of three periods per day, and typing them in his typing class every other day. His teachers focused on overall goals of having him try to follow through on projects and tasks, tolerate frustration, and decrease his overreaction to comments made by other students. John made it tough going for all of us at times because of occasional impulsive behavior, but staff, John, and his parents felt that he made overall progress of which he was proud during the year.

Some Final Thoughts

Often teachers use many of the above suggestions as part of their natural teaching style. As with any suggestions, teachers need to make them fit their own patterns and values. Often the issue is remembering to use modifications that one already knows, recognizing applicable situations when they occur, practicing techniques until they become habits. Implementation can be all that is necessary for many teachers. However, isolation of teachers and the rigidity of departmental structures can inhibit the sharing of useful and appropriate information about modifications for individual students. Divisions of schools into clusters or "houses" can facilitate such necessary communication.

Even such structural changes are sometimes not enough. Federal law 94-142 dramatically alters the skill variance among students now entering secondary schools. Curriculum will need to be reshaped and in many cases, new approaches, units, and courses will be added. Special educators will need to beef up their content knowledge and mainstream themselves into regular education. Making these changes during a school year is like trying to cross a bridge while you're building it. Secondary teachers must request and demand additional planning and release time, money allocations for new materials, and serious administrative attention to make such changes occur.

Susan Blom Raison is a doctoral student in Special Education, Department of Psychoeducational Studies, University of Minnesota, Minneapolis, Minnesota. Ms Raison was a resource teacher in a suburban school system of Boston, Massachusetts.

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Trends in Education

Selecting Instructional Materials:

Part I. The Antecedents of Selection

by Harriet Talmage

"There is an old adage in school circles: six months after the selection of a new textbook series hardly a single teacher will admit to having served on the committee."

A look around most classrooms and learning centers reveals, at best, the under-utilization of available instructional materials, or at worst, the inappropriateness of many materials. We can all recall examples of how today's perfect textbook becomes tomorrow's dusty white elephant. Why this poor match between the purchased instructional materials and the intended users? Why do well-meaning teacher committees and learning center personnel come up with selections that have limited staying power? There is an old adage in school circles: six months after the selection of a textbook series hardly a single teacher will admit to having served on the committee.

Generally textbook selection committees and personnel selecting supplementary materials begin the selection process without obtaining many of the relevant facts or identifying the constraints and limitations placed on selection. What are these facts? What are these limitations? The facts create the given educational context that determines the place and role of instructional materials within the curriculum. The constraints and limitations emerge from the nature of the users (teachers and students) and the values of the community, as well as the usual restrictions of cost and readability. All of this information forms the data base for making selection decisions. We can call this data base *the antecedents of selection.*

A Data Base: The Antecedents

Before launching any selection process, we need to build a data base in five areas that affect the selection of instructional materials.

1. The school district's educational policy. All school districts should have a functional philosophy of education, whether it is society-centered or child centered. In the ideal world of schooling, this would differ from community to community as the educational institution responds to community needs and values. What we find in practice, however, are usually high sounding statements about the good life that few can disagree with but no one can deliver in the real world of schooling. As a result, curriculum development receives little or no direction from these statements. It is important, however, to ferret out the most salient statements that represent the true position of the school district about its educational policy. Without this information, curricular decisions become the pawn of every vociferous group, whether it represents the communal voice or a self-serving subgroup. Ultimately, selected instructional materials must fit the district's educational position.

2. Description of the curriculum. Too often textbooks are selected without reference to the curriculum

"Too often textbooks are selected without reference to the curriculum they must serve. In effect, the textbook becomes the curriculum by default."

they must serve. In effect, the textbook becomes the curriculum by default. Prior to considering textbooks and other instructional materials for purchase, those responsible should work out a clear description of the school's educational program in terms of goals and objectives, content emphasis, preferred instructional methods, and the form of evaluation for determining effectiveness. For example, if the emphasis of a science curriculum is on understanding the scientific process, we would expect a different set of goals, content, methodology, and evaluation than if the emphasis were on acquiring scientific information. Selection of instructional materials should differ according to the curricular emphasis.

3. Characteristics of the students. To select instructional materials effectively, the selection committee must obtain data on the students to be taught. What competencies do they possess? Or lack? Do they respond to one mode of learning better than another? Do they respond to more structure or less structure? More or less openness? Inherent in instructional materials are differing instructional methodologies, student expectations, and response modes. If we fail to work out a description of the students' prevailing learning characteristics, we are likely to get a mismatch between materials and students.

4. Teachers' subject area knowledge and teaching style. Instructional materials to be selected should also fit most teachers' educational competency and teaching styles. Materials that call for the teacher to be a facilitator rather than a dispenser of knowledge would better suit teachers who have a less didactic approach and are more comfortable with the facilitator role. Materials that are teacher-directed would be more appropriate for teachers used to a traditional style.

5. Awareness of community sensitivities. A selection committee needs to be sensitive to the diversities of the community as well as to its common values. While historically the melting pot concept served an important integrative purpose in American life, today we are aware of the need to build on diversity to strengthen American life. In many instances, the district's philosophy has not undergone reexamination to take into consideration the changing times and population shifts. A selection committee should be alert to the subgroups who are under-represented in the decision-making process. Rather than permit subgroups to become a discordant or destructive force, the committee should pay attention to the needs of the many ethnic, age, and social groups making up the school community.

Yet these facts about the educational context, in and of themselves, do not guarantee appropriate decisions about instructional materials selection. What we need even more is a common language for analyzing the facts about the antecedents of selection.

A Common Language: Design Analysis

Ralph Tyler in his seminal work, *Basic Principles of Curriculum and Instruction*, proposed a framework from which we can derive a common language called *design analysis* to be used for collecting the data base and for analyzing instructional materials. Most curricula include four components: (1) goals and objectives; (2) content; (3) methodology; and (4) means of evaluation. If we can impose this framework on the five antecedents of materials selection discussed above, we will systematize data from different reference points. Further, if we superimpose the components of curriculum design on instructional materials, we will have parallel data from the antecedents and the materials to make comparisons. In addition to the four curricular components listed above, we need to identify the necessary entry expectations and describe other characteristics that affect future selection decisions.

The left-hand column in Table 1 identifies the components of design analysis. The five columns to the right of it will serve to describe the antecedents of materials selection. To describe the characteristics of the curriculum and facts about the other antecedents of selection, we must ask the following kinds of questions in order to fill out the other columns in the table:

- **Entry Expectations.** What abilities do the students need to come with in order to succeed in the curriculum? Or in this particular educational program?
- **Intents (rationale, goals and objectives).** What is the rationale (the philosophy) underlying the curriculum? What goals and objectives will students achieve after exposure to the curriculum?
- **Content.** What facts, generalizations, topics, and units are selected (scope) and how are they arranged (sequence)?
- **Methodology.** How is the content delivered to the students? What is the teacher's role? Student's role?

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Table 1: Design Analysis of the Antecedents of Instructional Materials Selection

Components	District Educational Policy	Curriculum Being Analyzed: _____	Student Characteristics	Teacher Characteristics	Community Concerns
ENTRY EXPECTATIONS Maturity Level Reading Requirements					
INTENTS Rationale Goals Objectives					
CONTENT Scope Sequence					
METHODOLOGY Roles Setting Grouping Teacher Training Teacher Preparation					
EVALUATION Type of Test Formal/Informal					
OTHER CONSIDERATIONS Biases (sex, race, religion, etc.) Community Subgroups Costs Physical Format Accuracy Currency Other: _____ _____					

Table 2: Design Analysis Comparisons: Antecedents and Instructional Materials

Components	Curriculum Characteristics (Summarized from Antecedents in Table 1)	Sample Instructional Materials*		
		WORLD GEOGRAPHY Gross, 1980 Follett	**WORLD GEOGRAPHY TODAY** Israel et al., 1980 Holt, Rinehart & Winston	**WORLD GEOGRAPHY** Pounds, 1980 Silver Burdett
ENTRY EXPECTATIONS Maturity Level Reading Requirements		Grade 6 reading competency. For grades 7-12.	Grade 9 reading competency. For grades 7-12.	Grade 7 reading competency. For grades 9-12 & advanced grades 6-8.
INTENTS Rationale Goals Objectives		To use current geographic information to develop reading, thinking & map skills through a classical approach.	To relate world geography to students' everchanging world through an interdisciplinary approach.	To teach today's students a blend of physical, cultural, economic and political geography.
CONTENT Scope Sequence		Systematic coverage of physical & political geography with regional study of people in their environment. 8 units, 58 lessons.	Geographic principles relating countries' present states to history, geography, natural resources, & interdependence of nations. 10 units.	Basic skills essential to studying physical, political, economic, and cultural geography. 5 units, 42 chapters.
METHODOLOGY Roles Setting Grouping Teacher Training Teacher Preparation		Traditional lectures (not supplied) can supplement text. Students read text; can complete review workshops. Teacher's edition provides behavioral objectives, annotations, unit guide, bibliography, audiovisual sources.	Traditional lectures (not supplied) can supplement text. Students read text; can complete vocabulary reviews, map skill projects, essays & discussion questions. Supplementary student workbook. Useful teacher's edition.	Teacher's manual gives behavioral objectives & useful suggestions for each chapter. Traditional lectures (not supplied) can supplement text. Students read text, complete review page & "reading & writing in geography" exercise.
EVALUATION Type of Test Formal/Informal		Review workshops—limited testing possibilities.	Criterion-referenced chapter & unit tests, on spirit masters.	Review exercises. Teacher's manual provides too-brief chapter tests & answer keys.
OTHER CONSIDERATIONS Biases (sex, race, religion, etc.) Community Subgroups Costs Physical Format Accuracy Currency Other: _____ _____		Visually attractive pictures, graphs, diagrams, atlas, glossary & pronunciation key. Comprehensive scope, although regional section overgeneralizes. Emphasis on resources & agriculture at expense of urbanization & industrialization. Lifestyle descriptions not current. Bland: needs motivational readings & activities. 544 pp., $11.97.	Eclectic use of pictures & maps, special interest features; glossary & pronunciation guides. Up-to-date. Emphasizes facts & map skills. Lacks in-depth exploration of some geographic areas. Unacceptable for inquiry learning. Teacher's edition has strategies for exceptional child. 550 pp., $12.57.	Large & clear type-face, abundant maps, diagrams, graphs, tables, special interest materials & atlas of excellent quality. Extensive glossary. Grade 9 is optimum grade level. Difficult to cover entire book in one year. 694 pp., $11.97.

*Detailed reviews of these programs are available in the Social Studies section of this issue.

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"A selection committee needs to be sensitive to the diversities of the community as well as to its common values."

Learning environment (physical and social)? What training and preparation do teachers need to have?

• **Evaluation.** How are students' outcomes reviewed? Through normative testing? Criterion-referenced testing? What is the evaluation emphasis? Cognitive? Affective?

• **Other Considerations.** What are the decision-making constraints? Costs? Community sensitivities? Biases?

Using the Framework: Materials Analysis

Once administrators, teachers, and learning center staff understand and can identify the characteristics of their curriculum and the other relevant antecedents, they can turn to analyzing the design of the instructional materials under consideration. The analysis of the materials as shown in Table 2 should parallel the components in Table 1. Thus a single design analysis language will serve to describe both the school's antecedents of selection and the instructional materials being judged.

Table 2 illustrates the analysis of three sets of world geography materials. [Ed. Note: These programs are evaluated in depth in the Social Studies section of this issue.] A selection committee would complete Table 1's detailed list of antecedents, and then summarize from it the most salient antecedent characteristics in the column in Table 2. The materials under consideration for selection would thus undergo in Table 2 the same design analysis as shown in Table 1.

In this phase of analysis of materials it is important to remain descriptive rather than judgmental. Special attention, however, should be given at this point to other considerations such as program costs and community interest groups, as well as bias, currency, and accuracy of the content, and any undesirable factors should be recorded. So, while we have not yet begun to make value judgments about the materials under consideration, what we do have is a common language for comparing the instructional materials with the needs of the school district. In other words, we have the necessary and relevant facts for making "best fit" decisions—that is, fitting the materials to the school district's needs. The next step, the selection process itself (to be discussed in Part II of this series), emerges naturally from the relevant facts and the design of the instructional materials.

Thus, selection personnel need to undertake four major steps in preparation for selecting instructional materials:

1. Identify the significant attributes or characteristics of the forces that impinge on selection decisions, which we have labeled the antecedents of materials selection.
2. Organize the characteristics using the common framework of design analysis shown in Table 1.
3. Select the salient antecedent characteristics and summarize them in the column in Table 2 entitled "Curriculum Characteristics."
4. Using the same design analysis framework, identify the salient characteristics of the instructional materials under study in Table 2.

Through the use of a common language to describe the most important characteristics of the antecedents of selection and the designs of instructional materials, selection committees can lay the groundwork for better decisions and ensure a better fit between the selected materials and the needs of the intended users.

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Harriet Talmage, Ph.D., is Director of the Office of Evaluation Research and Professor of Education at the University of Illinois at Chicago Circle. Dr. Talmage currently teaches evaluation research and instructional materials design analysis, and conducts evaluation studies of educational programs. This manuscript was prepared with the assistance of Sue Pinzur Rasher, M.Ed., who is Research Associate in the Office of Evaluation Research. *Part II in this series of articles, to appear in the April issue of* Curriculum Review, *will describe a "best fit" approach to matching instructional materials to the school's needs. Part III in June will discuss the selection of appropriate supplements to support the school's basal series selections.*